FISHERIES ANNUAL REPORT

OF THE MINISTER FOR TOURISM, FISHERIES AND FORESTRY FOR 1984

ERRATA

Page 12
Paragraph 4, line 1 — "The Minister for Fisheries and Forestry gratefully acknowledges" should read "The Minister for Tourism, Fisheries and Forestry gratefully acknowledges".

Page 36
Paragraph 1, lines 5, 6 — "Overall fish densities were low and ranged from 0.1 per m^2" should read "Overall fish densities were low and ranged from 0.1 per m^2 to 0.5 per m^2".

FISHERIES

REPORT FOR

1984

AN ROINN TURASOIREACHTA, IASCAIGH AGUS FORAOISEACHTA
(Department of Tourism, Fisheries and Forestry)

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RÉAMHRÁ

Gheofar sa Tuarascail seo cuntas ar obair mo Roinne i ndáil le hiascach sa bhliain 1984. Gheofar ann freisin cuntas staitistiuil ar iascach sa Stát agus achoimre ar ghniomhaiochtaí Chomhphobal Eacnamaiochta na hEorpa i 1984 faoi mar a theann siad i bhfeidhm ar thionscal iascaireachta na hEireann.

FOREWORD

This Report gives an account of the work of my Department in relation to fisheries during the year 1984. It also gives a statistical account of the fisheries in the State and a summary of the activities of the European Economic Community during 1984 as they affect the Irish fishing industry.

LIAM KAVANAGH

Minister for Tourism, Fisheries and Forestry
30 May, 1986.

PART I

SEA FISHERIES

LANDINGS OF SEA FISH

In 1984 the total value of all sea-fish (excluding salmon) landings by Irish registered vessels amounted to IR£53.1 m an increase of IR£1.2 m or 2.3% on 1983, of which amount IR£44.8 m relates to landings at Irish ports.

The total volume of sea-fish (excluding salmon) landings amounted to 202,196 tonnes of which 164,224 tonnes were landed at Irish ports.

The weights and values of annual landings of sea-fish (excluding salmon) at Irish ports by Irish registered vessels since 1975 are set out in the following table.

TABLE 1

Year	Tonnes	IR£'000
1984	164,224	44,842
1983	170,233	45,432
1982	194,842	43,809
1981	176,577	35,444
1980	134,886	28,866
1979	85,697	24,905
1978	93,689	22,669
1977	82,488	18,689
1976	80,663	12,864
1975	76,262	9,135

The leading ten fishing ports of 1984 in order of value of fish landed were Killybegs, Castletownbere, Greencastle, Howth, Dunmore East, Clogherhead, Rossaveel, Burtonport, Valentia and Kilmore Quay.

DEMERSAL FISHERY

In 1984 the total landings of demersal fish amounted to 37,596 tonnes. Landings of dogfish showed the largest percentage increase in volume of all demersal species increasing by 2,002 tonnes or 47.29%. Whiting was the species caught in the greatest quantity and was followed by dogfish, cod, haddock and plaice in that order. The

total value of the demersal fish catch increased by 11.11% from IR£17.1 m in 1983 to IR£19.0 m in 1984. Cod was the first in terms of cash earnings followed by whiting, haddock, plaice and monkfish. These five varieties contributed 60% of the total value of the demersal catch. The overall average price of all demersal fish in 1984 was IR£505 compared with IR£474 per tonne in 1983. The total quantity, value and average value per tonne of landings of demersal fish for each year since 1975 is shown in the following table.

TABLE 2

Year	Quantity Tonnes	Value IR£'000	Average Value Per tonne IR£
1984	37,596	18,984	505
1983	36,011	17,069	474
1982	34,916	13,908	398
1981	35,916	11,948	333
1980	27,231	8,398	308
1979	21,100	7,721	366
1978	17,900	5,862	327
1977	18,900	5,709	302
1976	23,800	4,652	195
1975	20,000	2,881	144

PELAGIC FISHERY

The total pelagic catch for 1984 was 103,408 tonnes. The total value of the catch was IR£12.5 m representing a decrease of IR£3.6 m or 22.36% on the figure for 1983.

Herrings

Landings of herring amounted to 31,622 tonnes valued at IR£4.5m.The average price was IR£142 compared with IR£163 per tonne in 1983.

Exports of fresh, chilled or frozen herrings in 1984 amounted to 16,916 tonnes valued at IR£5.2m as compared with 18,299 tonnes valued at IR£6.6m in 1983. The quantity exported in salted or smoked forms was 11,513 tonnes valued at IR£5.8m, as compared with 11,917 tonnes valued at IR£6.7m in 1983. A further 1,303 tonnes valued at IR£2.3m was exported in prepared or preserved form. The total herring exports of 29,732 tonnes valued at IR£13.3m represents a decrease of 3% in quantity and 5% in value over the 1983 exports..

The Federal Republic of Germany continued to be the biggest market for herring having purchased 5,596 tonnes valued at IR£4.4m. France were next having purchased 4,810 tonnes valued at IR£2.1m followed by the Netherlands with purchases of 4,341 tonnes valued at IR£1.7m. Poland, East Germany and Rumania were involved in transhipment purchases of fresh herring having purchased 3,497 tonnes, 3,344 tonnes and 1,999 tonnes respectively.

The following table shows the total quantity, value and average value per tonne of herring landings for each year since 1975.

TABLE 3

Year	Quantity Tonnes	Value IR£'000	Average Value per tonne IR£
1984	31,622	4,498	142
1983	32,025	5,229	163
1982	29,700	5,233	176
1981	29,600	5,046	170
1980	36,800	9,395	255
1979	27,400	7,863	287
1978	27,700	8,171	295
1977	23,100	6,033	261
1976	22,000	3,133	142
1975	28,800	3,232	112

Sprats

Landings of sprats showed a decline from 5511 tonnes in 1983 to 4655 tonnes in 1984 a decrease of 15.53% while the value of the catch declined from IR£489,000 in 1983 to IR£437,000 in 1984 a decrease of 10.63%.

The following table shows the total quantity, value and average value per tonne of sprats for each year since 1975.

TABLE 4

Year	Quantity Tonnes	Value IR£'000	Average Value per tonne IR£
1984	4,655	437	94
1983	5,511	489	89
1982	4,109	302	74
1981	4,984	313	63
1980	9,350	705	75
1979	1,892	128	68
1978	9,119	342	38
1977	6,055	199	33
1976	8,576	218	25
1975	3,516	59	17

Mackerel

Landings of mackerel amounted to 53,211 tonnes valued at IR£6.1m as compared with 65,537 tonnes valued at IR£8.5m in 1983. The average price per tonne was IR£115 as compared with IR£130 in 1983. The chief landing places for mackerel were Killybegs, Castletownbere and Rathmullen.

Exports of fresh, chilled or frozen mackerel in 1984 amounted to 59,720 tonnes valued at IR£21.5m as compared with 81,316 tonnes valued at IR£23.8m in 1983. The total mackerel exports of 60,023

tonnes valued at IR£21.8m represents a decrease of 36% on the 1983 figures.

Nigeria and Egypt were among the biggest non EEC markets for mackerel, exported in a whole frozen state, with purchases of 14,828 tonnes valued at IR£6.7m and 4,621 tonnes valued IR£1.7m respectively. The U.S.S.R. purchased 7,890 tonnes valued at IR£2.5m mainly through transhipment transactions. France and the Federal Republic of Germany were the biggest markets within the European Community with France purchasing 7,009 tonnes valued at IR£2.5m and Federal Republic of Germany purchasing 6,555 tonnes valued at IR£2.8m.

The following table shows the total quantity, value and average value per tonne of mackerel for each year since 1975.

TABLE 5

Year	Quantity Tonnes	Value IR£'000	Average Value per tonne IR£
1984	53,211	6,139	115
1983	65,537	8,542	130
1982	110,363	12,456	113
1981	93,802	9,893	105
1980	50,791	4,226	83
1979	24,217	1,792	74
1978	27,507	1,720	63
1977	22,695	1,748	77
1976	14,394	877	61
1975	13,354	584	44

SHELLFISH

The value of shellfish catch at IR£13.4m showed an increase of IR£1.2m on the value of the 1983 catch. Landings of Dublin Bay Prawns decreased from 5,545 tonnes in 1983 to 3,987 tonnes in 1984 with a consequent decrease in value from IR£5.5m to IR£4.4m.

The value of shellfish landings over the past ten years is given in the following table.

TABLE 6

Year	IR£'000
1984	13,407
1983	12,229
1982	11,909
1981	8,243
1980	6,143
1979	7,334
1978	6,526
1977	4,936
1976	3,886
1975	2,374

EXPORTS

At IR£89m exports of fish and fish products including both sea and fresh water preparations (see Part II of this Report) continued to establish new records. The comparative figure for 1983 was IR£85m. Details of exports are given in Appendix No. 4.

PERSONNEL AND VESSELS

In 1984 there were 3,135 vessels in operation as compared with 3,020 in 1983. The increase in numbers was mainly attributable to increases in the smaller vessel categories with boats in the 18 foot Keel and over class rising by 111 and numbers in the 10 and under G.R.T. class rising by 22. Vessels in the 18 foot Keel and under category did however decrease by 36. Both the 11-15 and 16-25 G.R.T. categories decreased by 2 and 5 vessels respectively. The 26-50 G.R.T. class showed an increase of 37 vessels while the 51-74 G.R.T. category rose by 10. Vessel numbers in the 75-99 G.R.T. category decreased by 7 and the 100 and over G.R.T class increased by 4.

The number of fishermen engaged in the industry in 1984 decreased as compared with 1983. Decreases occurred both in the number of full-time fishermen engaged—3,232 in 1984 as compared with 3,431 on 1983, and in the number of part time fishermen which dropped from 5,141 in 1983 to 4,574 in 1984. The decrease in the number of men engaged in fishing activity was mainly due to reductions in crew numbers by vessel owners to offset increasing overhead costs.

AQUACULTURE

It is only in the past twenty years or so that the farming of fish in the sea — mariculture — has become a reality. It was only in the seventies that fish farming got off the ground here in Ireland with this now vital sector of the industry surging forward at the end of that decade and species such as clams and escallops are now being farmed with the main emphasis on oyster, mussel and salmonid husbandry.

Of course mariculture just did not take off on its own; the State has been actively involved in the encouragement and development of marine farming through the setting up of a National Mariculture Grants Scheme in 1980 (operated by An Bord Iascaigh Mhara) and the provision of scientific technical and engineering research, advice and assistance over the years. Advice and assistance from both the Department and B.I.M. continued to be available throughout 1984 to various private operators of shellfish and salmonid rearing stations.

With the growing State back-up for this 'cinderella' of the industry, marine fish farming continued to expand in 1984 resulting in this sector contributing significantly to the Fisheries input to the National Economy.

AN BORD IASCAIGH MHARA

The Board received a grant from the Fisheries Vote for the year

ended 31 December 1984 of IR£7.55m for administration and capital development. Repayable advances totalling IR£2.79m were also made to the Board from the Central Fund, mainly for the provision of boats and gear.

The Board's Annual Report on its activities in 1984 is published separately.

SEA FISHERIES PROTECTION

Regular patrols of the exclusive fishery limits of the State were carried out by the Naval Service and the Air Corps to ensure compliance with European Community and national measures for protection, conservation and control of sea fisheries. 29 foreign vessels were arrested as a result of these patrols. 16 skippers incurred fines and forfeitures totalling IR£509,354, ten were still *sub judice* at the end of the year and three were released for lack of evidence. The various infringements with which they were charged include illegal entry of the fisheries, illegal fishing and illegally attempting to fish.

The Minister for Fisheries and Forestry gratefully acknowledges the continued co-operation of the Naval Service, Air Corps and Garda Siochana in the enforcement of Fisheries Protection Legislation.

EUROPEAN ECONOMIC COMMUNITY

Common Fisheries Policy

During the Irish Presidency of the EEC in the last six months of 1984, a major landmark was reached when the Council of Fisheries' Ministers, on 19/20 December, 1984, agreed a regulation fixing the total allowable catches (TACs) and quotas for 1985.

This is the first time since the inception of the Common Fisheries Policy that agreement on TACs and quotas has been reached in advance of the fishing year, thereby facilitating better planning for the protection of fishing grounds and stocks and the balanced exploitation of resources. Regulations adopting fisheries agreements with Sweden, Norway, Faroes and Spain for 1985 were reached at the same Councils as were regulations setting out catch quotas in Greenland waters and third-country fishing in French Guyana. In the marketing area, the Council instructed the Commission to examine the measures that could be adopted to reflate the depressed herring market. A limited additional autonomous tariff quota for certain presentations of herring was also agreed upon. Other agreements reached were an amendment to the special carry-over premium scheme for Mediterranean sardines and anchovies and the re-opening of mackerel fishing in ICES area VIa, north of latitude 58° N (which was formerly closed from 1 December to 30 April).

The result of the Fisheries Councils under the Irish Presidency were very satisfactory in that all outstanding matters were successfully

concluded before the end of the Presidency. In particular, the agreeing of TACs and quotas in advance of the 1985 fishing year for the first time sets a valuable precedent for future years.

In the earlier half of the year, TACs and quotas for 1984 were agreed at the Council of Fisheries' Ministers meeting on 31 January, 1984. Other regulations adopted during 1984 (including the Councils of 24 May, 1984 and 10 September, 1984) were:

(a) a regulation amending certain technical conservation measures concerning the rate of by-catches of white fish in the North Sea Norway-pout fishery area;

(b) amendments to the 1984 quota allocations for Celtic Sea and Clyde herring, North Sea sprat, monkfish and megrim;

(c) a new EEC/US Fisheries Agreement to replace an Agreement concluded in 1977 and which expired on 30 September, 1984;

(d) provisional TACs and quotas for herring stocks in the North Sea were unilaterally set by the Council as agreement with Norway on the level of the TACs was not reached.

Within the broader context of the accession of Spain and Portugal to the EEC negotiations on the fisheries chapter continued throughout the year mainly centred on access of Spanish vessels to Community waters.

European Agricultural Guidance and Guarantee fund (FEOGA)

Guarantee Section

The prices for the 1984 marketing year came into effect on 1st January 1984.

The following table shows approximate price increases for the quality grades of most interest to Irish fishermen.

Species covered by Community Price support arrangements	Percentage increases %
Spur dogfish	2
Spotted dogfish	2
Cod	5
Saithe	4
Haddock	6
Whiting	6
Ling	2
Mackerel	2
Herring	0
Hake	6
Plaice	0 First period
	5 Second period

EEC subvention for withdrawals in 1984 amounted to IR£1.603m in respect of fish which failed to meet the minimum intervention price.

Guidance Section

In 1984 the Commission decided to grant-aid, projects involving the construction and modernisation of inshore fishing vessels and the construction of aquaculture establishments as part of the common measure for restructuring the Community inshore fishing industry. The grants awarded to Ireland amounted to IR£2.245m in relation to the construction of 9 new fishing vessels, modernisation of 9 existing vessels and 6 aquaculture projects.

RESEARCH AND DEVELOPMENT

Pelagic Fisheries

Investigations were continued throughout 1984 on the stocks of herring and mackerel in Irish waters. These investigations, as in previous years, are based on samples of catches obtained from all the major ports, and on larval and juvenile fish surveys, using chartered commercial fishing boats. The investigations are used to make an assessment of the size of the various stocks and thus form the basis of the advice for the management of these stocks.

Herring

The recovery of the herring stock along the south coast continued during 1984. This recovery has been largely caused by very good spawning and survival of herring which first began in 1979 and has continued through until 1981. One result of the continued good spawning is that the population of herring in this area is now largely composed of young small fish. In spite of heavy catches in 1984 and massive dumping of unmarketable fish, the stock at spawning time (October to December) was estimated to be over 100,000 tonnes and should yield catches of about 16,000 tonnes in 1985/86. However, it appears that that portion of the stock which spawns in the western part of the Celtic Sea and Div VIIJ in the autumn has not recovered as fast as the winter spawning component off the Waterford/Wexford coasts and care should therefore be taken to ensure that this part of the fishery is not excessively exploited.

As, along the south coast, the herring stocks along the west and northwest coasts (ie ICES divisions VIA South and VIIC) have also recovered in the last few years. The recovery has not been as dramatic as that on the south coast, partly because of lower recruitment of young fish and also because the total landings have continually exceeded the scientifically desired level. In addition, large quantities of good quality herring were withdrawn from sale and dumped at sea during the year because of lack of suitable markets. The spawning stock in 1984 was estimated to be about 104,000 tonnes and catches in 1985 should be about 14,000 tonnes. It would also appear that

recruitment of herring, which were spawned in 1981, i.e. 3 year old in 1984 may be the highest for a number of years and this should further boost the stock.

The stock in the Irish Sea has continued to recover in recent years and was estimated to be about 24,000 tonnes in 1984. This fishery which is very well regulated by the UK, is only exploited by a small number of Irish boats during the summer and autumn months.

Mackerel

Research on the mackerel fishery and the size of the stock was continued during 1984. These investigations are mainly confined to a shore based sampling programme although some tagging experiments were carred out on board a Norwegian vessel off the south west coast. The results of the sampling programme indicate that the serious decline in the mackerel stock has continued throughout the year. This decline is caused by a continuation of the very high catches which have been taken in recent years by a number of countries including Ireland. An even more serious aspect of the whole stock situation is that for the second year in succession there appears to have been a serious decline in recruitment of young fish. Spawning in 1983, as well as in 1982, appears to have been exceedingly poor and this fact will mean that the stocks will decline even faster in the immediate future unless severe conservation measures are implemented. Apart from routine sampling work, some investigations on the rate of infestation of mackerel by parasites were carried out during 1984. These investigations were funded by the Donegal mackerel exporters.

Sprat

Samples of sprat were examined whenever possible throughout the year from landings made at various ports. Although sprat fisheries have continued to grow in importance in recent years, because they provide a viable alternative to boats formerly engaged in herring fishing, the investigations carried out are confined to providing information for exporters on the quality of fish available — e.g. weight, length, presence or absence of food and fat content. Sprat stocks, because they are such a short lived species (3 years) fluctuate wildly and fisheries for them, are therefore very erratic.

Fat Content

The Fisheries Research Centre continued to supply information throughout the year on fat content of herring, mackerel and sprats to exporters and others in the trade.

DEMERSAL FISHERIES

Landings of cod, whiting and plaice from the Irish Sea and cod, haddock and whiting from the northwest and west coasts were sampled throughout the year. In addition landings of cod and haddock from

Rockall were sampled during the summmer months when Irish vessels fished that ground.

Samples of whiting discarded in the *Nephrops* fishery were taken throughout the year.

A survey for juvenile plaice in the Irish Sea was carried out in September. These surveys have been conducted since 1976 and are now used in the assessment of this stock to predict recruitment. A new series of groundfish surveys was started in the Irish Sea in June and September aimed mainly at predicting recruitment for cod and whiting.

Exceptionally good recruitment boosted the spawning stock of Irish Sea cod to over 11,000 tonnes between 1981 and 1983 and this declined to 9,300 tonnes in 1984 which is about average. Despite this, Irish catches of cod in 1984 were the lowest of the decade mainly because of poor fishing during the spawning season in March.

Irish Sea whiting has shown a decline in spawning stock since 1981 but this is likely to increase with the recruitment of fish spawned in 1983 which appear to be abundant and first appeared in the catches in large numbers in the last quarter of 1984 when about half the year's catch was taken. The spawning stock was estimated at 12,000 tonnes in 1984.

The spawning stock of Irish Sea plaice was estimated to be 5,300 tonnes in 1984, which is above the average for the last ten years, whereas Irish Sea sole, estimated at 4,400 tonnes in 1984, is below average.

With the exception of sole, the main demersal stocks in the Irish Sea are being exploited at levels above the optimum resulting in much uneconomic fishing. The use of too small a mesh size in the Irish Sea exacerbates this problem resulting, particularly in the case of whiting, in considerable discarding.

Off the northwest coast (Division VIA) the cod spawning stock in 1984 was estimated to be 22,000 tonnes which is about the average level whereas haddock has been well above the average level since 1981 and was estimated to be 75,000 tonnes in 1984. The haddock year class spawned in 1983 is of above average abundance and will boost the catches and the spawning stock in 1985. Whiting off the northwest coast has shown a declining trend since 1981 as the strong 1980 year class passes out of the fishery. The spawning stock in 1984 is estimated to be 33,000 tonnes which is slightly below the average for the decade.

Cod, haddock and whiting off the northwest coast are all being exploited at above optimum level.

SHELLFISH

Nephrops

Work on *Nephrops* was much increased in 1984 with 17,000 sampled in the Irish Sea compared to 3,000 in 1983. Samples covered catch, landings and discards, allowing valuable insight into the relative proportions of small (unmarketable) *Nephrops* in the catch. Where possible, samples were related to depth of grounds fished, boat size and engine power and mesh size of trawl in use. In addition, sampling of the Porcupine Bank fishery based in Rossaveal, Co. Galway was undertaken on a small scale; this showed a very large average size of individual *Nephrops* to be caught, although this average size is already believed locally to be diminishing despite the recent date of the development of this Irish fishery.

A major development involved the initiation of experiments to mark *Nephrops* in the Irish Sea with binary coded magnetic microwire tags, which have been used successfully for salmon. The purpose of this was to obtain information about *Nephrops* growth rate, about which little has hitherto been known. About 940 were marked and released in early July and 24 of these were recovered 5 weeks later in August, a recovery rate of 2.55%, which is very much the best recovery rate for any population in a large-scale trawl fishery so far realised in any country. A further 1,500 *Nephrops* were marked and released in August and it is hoped that some recoveries after a year's growth will be obtained in the summer of 1985.

In December a cruise in the Research Vessel "Lough Beltra" was undertaken to continue the observations made over the years on the effect of light on catch size in *Nephrops*; as expected a strong peak in catches at an illumination level of 0.01 candelas approx. (roughly that found on the grounds just before dawn and after dusk in the shallowest part of the Irish Sea fishery (20-25 metres depth)).

Fish Capture

A cruise was carried out in September with a *Nephrops* trawl to investigate escapement by use of multiple small-meshed covers, including escapement during hauling,in an effort to see whether losses of relatively large *Nephrops* were unduly increased during the delay in hauling which occurred where catches were brought aboard in two or more lifts; while results were somewhat inconclusive, this would appear not to be a very serious source of loss.

An observer was present at a Sea Fish Industrial Authority experiment with a "separator" *Nephrops* trawl with upper and lower cod-ends and divided into upper and lower sections for most of its length, with the object of segregating whiting in the upper cod-end from *Nephrops* in the lower. While much of the period of the observer's visit was characterised by poor weather, the gear appears to be moderately successful though perhaps not much more so than simpler gear already used in Irish experiments.

The physico-chemical parameters in three designated shellfish growing areas were monitored for the purposes of EEC Shellfish Directive 79/923. These areas included Clarinbridge, Killary Harbour and Mulroy Bay. The oyster fisheries in Tralee Bay and Clew Bay were also sampled.

Monitoring as part of the Joint Monitoring Programme of the Oslo and Paris Commissions was carried out at five JMG stations. These included the Boyne Estuary, Dublin Bay, Waterford Harbour, Cork Harbour and Shannon Estuary. Shellfish were sampled from these areas for chemical analysis.

A limited survey of the waste dumping ground in the Shannon Estuary was undertaken. Further investigations of water quality in the south-west industrial waste dumping ground off Cork were also carried out.

The Department's Fisheries Research Centre participated in the 1st ICES Intercalibration Exercise for metals in sediments. Development work on the analysis of organo-chlorines was continued. Scientific advice continued to be provided to Local Authorities and the Department of the Environment on effluent discharge licence applications under the Local Government (Water Pollution) Act, 1977. Likewise, scientific advice also continued to be provided to the Department of Communications on licences issued under the Dumping at Sea Act, 1981 in respect of sewage sludge, industrial wastes and dredge spoil, as well as on licences issued under the Foreshore Act, 1933.

Analyses, including histamine and metals, continued to be carried out on fish and shellfish for export certification purposes.

AQUACULTURE

Escallops

The adult population of escallops in the North Water of Mulroy Bay was estimated in 1980 at 554,000, this has declined to 222,000 in 1984. There have been no collections of escallops onto collectors since 1982. In 1984 the spat failure may be related to the high water-turbidity during July and August. During this time bivalve and other zooplankters declined in number. The only bivalves recorded settling were bean mussels and mussels. These however appeared in small numbers. A small escallop settlement was recorded from the Broadwater.

STUDENT BURSARIES

The long standing programme of employing third level students for periods of eight weeks during the summer continued in 1984. Eleven undergraduates from Irish Universities and Regional Colleges of Technology participated in five marine research programmes: one on mariculture research in Mulroy Bay, Co. Donegal; two each on the investigation of chemical problems associated with the marine environment, algae bloom investigations and on demersal fish research; a further four bursars worked on Irish Sea Nephrops investigations.

FOREIGN RESEARCH VESSEL CRUISES

Scientific staff of the Fisheries Research Centre worked on board the USSR research vessel Persey-3 which surveyed blue whiting stocks west of Ireland. Staff also worked on the research vessel Anton Dohrn of the Federal Republic of Germany which carried out a survey of pelagic fish stocks around Ireland and on the Norwegian purse seiner NyBo, with Norwegian scientists, tagging mackerel off the south and south-west coasts of Ireland.

FISH PATHOLOGY UNIT

Work continued into the diagnosis of disease in wild and farmed fish and statutory functions of disease control within the country. (For further details please refer to pp 32 and 33, Part II of this Report).

Bacterial disease

Gaffkaemia disease of lobsters was diagnosed by Danish authorities in lobsters which originated in the southwest of Ireland. Unfortunately, because it was late in the season it was not possible to investigate the source of this infection.

Fish Diseases Seminar

A very successful seminar for the benefit of fish farmers focussing on disease problems in marine fish farming was held at Abbotstown in March. Over eighty participants attended the seminar which was addressed by fish disease experts from Norway, Scotland and England. The paper presented at this seminar have been published by the National Board for Science and Technology.

ENGINEERING

FISHERY HARBOUR WORKS

Designated Fishery Harbour Centres

At Castletownbere Fishery Harbour Centre expenditure on development work during the year was IR£110,000. This included expendi-

ture on the provision of storage accommodation for machinery and toilet facilities.

At Howth Harbour IR£½m was spent during 1984 on development work. This included expenditure on the provision and installation of the syncrolift and payment for works already completed.

Other Harbours, Ports and Landing Places

Fishery harbour improvement works, grant-aided by the Department of Fisheries and Forestry, were completed during the year at Kilmore Quay, Co. Wexford, Caherciveen, Cashen and Scraggane, Co. Kerry, Seafield, Co. Clare, Dooneen, Youghal and Garnish, Co. Cork, Skerries, Co. Dublin, Kilcummin and Rathlacken, Co. Mayo, Rathmullan and Portmore, Co. Donegal. A site investigation was undertaken at Schull, Co. Cork and an underwater survey was carried out at Carrigaholt, Co. Clare. At the end of the year fishery harbour works were in progress at Killala, Inch Island, Bone Rock and Belderrig, Co. Mayo, and Portevlin, Co. Donegal.

Improvement works at harbours in designated Gealtacht areas as recommended by the Department of Fisheries and Forestry and financed by Roinn na Gaeltachta were completed during the year at Magheraroarty and Ballyness, Co. Donegal and Inisheer, Co. Galway, while works were in progress at Rinroe, Co. Mayo, Leac Dubh and Gweedore, Co. Donegal, Kilroan and Carna, Co. Galway.

TECHNOLOGY

Fish Quality Control

During the year, landings were supervised by Fish Quality Officers to ensure compliance with the Demersal (Handling, Storage and Transport) Regulations, 1979, the Pelagic (Handling, Storage and Transport) Regulations, 1979, the Shellfish (Handling, Storage and Transport) Regulations, 1979 and with the EEC common marketing standards for fresh or chilled fish. These standards, which relate to size and freshness categorization, are laid down by EEC Council Regulation Nos. 103/76 and 3166/82. All fish offered for sale for human consumption within the Community must comply with the provisions of these Regulations.

INTERNATIONAL AND OTHER CONFERENCES

During 1984 the Department participated in the following conferences, committees, working groups etc:

Abroad

Statutory Meeting of the International Council for the Exploration of the Sea (ICES) (Copenhagen) and the following ICES working groups and advisory committees:

Advisory Committee on Fisheries Management (Copenhagen, Denmark)
Fishing Technology and Fish Behaviour Working Group (Hirtohals, Denmark)
Herring Asssesment Working Group for the area south of 62°N (Copenhagen, Denmark)
Herring Larval Survey Working Group (Aberdeen, Scotland)
Irish Sea and Bristol Channel Working Group (Copenhagen, Denmark)
Mackerel Working Group (Copenhagen, Denmark)
Marine Algae Blooms Working Group (Copenhagen, Denmark)
Marine Chemistry Working Group (Rostock, German Democratic Republic)
Marine Pollution and Basedine Studies in the North Atlantic Working Group (Lisbon, Portugal)
Marine Sediment Working Group (Rostock, German Democratic Republic)
Meeting of the Bureau of ICES
Monitoring of Salmon Catches/Tags Working Group (Scotland)
Nephrops Working Group (Aberdeen, Scotland)
Pathology of Marine Organisms (Nova Scotia, Canada)
Roundfish Working Group (Copenhagen, Denmark)
Statistics Liaison Working Group (Copenhagen, Denmark)

Other conferences, committees, meetings, etc., attended.
Ad hoc Working Group on Irish Sea Herring Stocks (Coleraine, Northern Ireland).
Fisheries Committee Meeting (Paris, France); Organisation for Economic Co-operation and Development (OECD)
Symposium on Fish Disease (Paris, France); Organisation for Economic Co-operation and Development (OECD)
9th Meeeting of the Joint Monitoring Committee (Stockholm, Sweden); Oslo and Paris Commissions
Ad hoc Working Group on Monitoring (London, United Kingdom); Oslo and Paris Commissions
Developments in Fish Technology (Madrid, Spain); West European Fish Technologists Association Conference (WEFTA)
Analytical Methods for Fish Products (Ostend, Belgium); West European Fish Technologists Association Conference (WEFTA)
Course on Fish Disease (Stirling University, Scotland)
Codex Committee for Fish and Fishery Products (Bergen, Norway)
Scientific and Technical Committee for Fisheries (Brussels, Belgium); Commission of the European Community
Scientific and Technical Committee for Fisheries, Research Product Funding Sub-Committee (Brussels, Belgium); Commission of the European Communities.
World Conference on Fisheries (Rome, Italy); Food and Agricultural Organisation (FAO)

Home

An Taisce Symposium, "Dublin Bay — at risk"

Interim Committee for Monitoring Fish Diseases

NBST-AFF-EEC Symposium; "Environment and Chemicals in Agriculture, Risks and Benefits"

Oil Pollution Committee (An Interdepartmental Committee conducted under the auspices of the Department of the Environment)

Special Meeting on Fisheries Management (Seminar)

Technical Committee on Effluent and Water Quality Standards (An interdepartmental committee conducted under the auspices of the Department of the Environment)

Legislation

Particulars of the Statutory Instruments relating to Sea Fisheries made during the year are included in Appendix No. 20.

PART II

INLAND FISHERIES

CATCHES OF SALMON, SEA TROUT AND EELS

Details of the catches of salmon, sea trout and eels in the various fisheries regions during 1984 are given in Appendices Nos. 10 to 16 of this Report. As usual, the catches in the Foyle Fisheries Commission area, formerly the Moville Fishery District, are not included but they are referred to in a separate section of the Report.

In 1984 the catch of salmon and grilse amounted to 262,996 fish weighing 839 tonnes and valued at IR£4.6m compared with 490,764 fish weighing 1515 tonnes and valued at IR£6.7m for 1983. The overall average weight at 3.01kg was slightly lower than in 1983. The commercial catch at 803 tonnes was substantially lower than the 1983 figure of 1465 tonnes. The total rod catch amounted to 9,813 fish weighing 36.25 tonnes, and valued at IR£199,783 compared with 1983 when 14,232 fish weighing 49.55 tonnes and valued at IR£218,504 were caught. The total number of licences of all kinds issued for angling for salmon and sea trout was 17,494 compared with 16,071 in 1983. The salmon catch figures for nets and rods for the years 1982, 1983, and 1984 are given in Appendix No. 11.

In 1984 the salmon and grilse catch (by weight) was distributed as follows:—

Drift nets	75%
Draft nets	16%
Stake nets, snap nets, weirs and other commercial methods	5%
Rod and line	4%

The weight and value of salmon and sea trout caught by all fishing engines during the past three years are given in Appendix No. 10. Very little commercial fishing specifically for sea trout is done in this country and over 50% of the total catch is taken as a by-catch of commercial fishing for salmon. It is difficult, therefore, to compile accurate statistics.

FISHERIES PROTECTION AND CONSERVATION

Protection

The level of illegal fishing and the increasing level of violence being offered by some fishermen to fishery protection staff continues to give cause for concern. The many statutory conservation measures viz. licensing, close seasons, weekend close time, type, length and depth of fishing nets and methods of fishing etc. are intended to ensure adequate stocks for the future. The fishery laws are enforced by the Fisheries Boards.

In addition to the work of the Boards, the Department of Defence supplied two minesweepers in 1984 during the salmon fishing season to enforce the salmon fishery laws at sea. Aerial patrols are also provided by the Department of Defence.

Conservation

During 1984 the Department continued to monitor the situation in connection with fishery conservation measures and appropriate legislation was enacted as considered necessary.

A list of all statutory instruments made in 1984 is given in Appendix No. 20

ARTERIAL DRAINAGE:

Drainage schemes are in progress in the catchments of the Boyne, Maigue, Corrib/Mask/Robe, Bonet and Boyle/Lung. A drainage scheme is also being considered for the Dunkellin-Kilcolgan catchment in Co. Galway.

In accordance with the Arterial Drainage Act, 1945 close liaison was maintained between the Department and the Office of Public Works in relation to rehabilitation works with a view to reducing the adverse effects of drainage on fisheries and to ensure that the drainage works are executed in such a way as to cause the least possible damage to fish life. All ongoing drainage schemes incorporate amelioration works recommended by the Department of Fisheries and Forestry. A programme of rehabilitation works was carried out on the Boyne, Maigue, Mask/Carra and Bonet. These works were carried out by the various Regional Fisheries Boards and financed by the Office of Public Works. The Fisheries Boards work closely with the Department in the drawing up and implementation of post drainage rehabilitation works on all rivers. The Boards also maintain close contact at local level with Office of Public Works officials on the timing and extent of post drainage maintenance works.

WATER ABSTRACTION SCHEMES

Water abstraction schemes, especially those for public water supply purposes, continue to pose problems for fish stocks and angling and are kept under careful scrutiny by the Department. The impact of such schemes on lake levels, river flows, fish migration, stock levels and angling conditions is assessed, and measures to mitigate adverse effects are devised and recommended to the relevant Local Authority.

In 1984 the Department was consulted about water abstraction schemes on the following rivers and lakes — Rivers Fane, Glyde and Dee, Derry, Slaney, Lingaun Owgarriff, Newport, Feale, Eske, Gweedore and Loughs Muckno, Inchiquin, Derg, Cutra, Derrynasallagh, Doolough, Sillogue Well, Owenboliska, Rea, Carrowmore and Gill.

THE CENTRAL AND REGIONAL FISHERIES BOARDS

The Central Fisheries Board and the seven Regional Fisheries Boards which were established in 1980 are responsible for the protection and development of inland fisheries and for the development of angling.

The annual report of the Central Board gives details of the activities of the Central and Regional Fisheries Boards during the year.

In 1984, negotiations between management and staff concerning the introduction of a Staff Scheme for the field grades of the Central and Regional Fisheries Boards as provided for under Section 32 of the Fisheries Act, 1980 neared completion. This scheme provides for common grades, remuneration and conditions of service for the field staff of all the Fisheries Boards. It also provides for the redeployment of field staff working on the development of brown trout and coarse fish to the relevant Regional Boards.

INTERNATIONAL SALMON CONVENTION

During 1984, the first meetings of the newly ratified North Atlantic Salmon Conservation Organisation (NASCO) were held at the Organisation's Headquarters in Edinburgh. NASCO consists of a Council and three regional Commissions as follows:—

Council — Canada, EEC, Faroe Islands, Iceland, Finland, Norway, Sweden, U.S.A.
North American Commission — U.S.A., Canada
West Greenland Commission — U.S.A., Canada, EEC
North East Atlantic Commission — EEC, Faroe Islands, Iceland, Norway, Sweden

The Council and each Commission requested ICES (International

Council for Exploration of the Sea) to provide scientific advice concerning the conservation of salmon stocks in the North Atlantic.

Quotas for salmon catches have been fixed within the EEC since 1976 for Greenland and since 1982 for the Faroes Islands. The fixing of such quotas will now be done by NASCO. The salmon catch quota for 1984 for Greenland was 870 tonnes and for the Faroe Islands 625 tonnes.

SALMON LEVY

During 1984 a total of IR£22,961 was collected in respect of outstanding levies on first sales of salmon and allocated towards the overall cost of conserving and developing inland fisheries. The salmon levy was discontinued on 1st June 1982.

EMPLOYMENT IN THE INDUSTRY

Exclusive of persons employed on the marketing and transport of fish, a total of 5,800 found either wholetime or part-time employment in inland fisheries during the year. This figure includes 4,300 persons estimated as being engaged in netting for salmon, 220 engaged in eel fishing, 450 employed by the Central and Regional Fisheries Boards on protection and development of fisheries, 800 engaged in netting and protection work in the Foyle area, and the remainder employed by proprietors of commercial and sport fisheries or by angling associations.

INSTRUMENTS OF CAPTURE

The number of the various types of licences issued in each fishery district and the rates of licence duty are given in Appendices Nos. 18 and 19.

IMPORTS AND EXPORTS OF LIVE AND DEAD FRESHWATER FISH

The Department continued to issue import licences for live and dead freshwater fish in accordance with the Fisheries Acts. Stringent conditions are attached to each licence. Export licences for salmon and trout are also issued by the Department. All licensing requirements are designed to ensure the disease free status and quality of imports and exports.

Salmon and rainbow trout ova from Scotland, Norway, Denmark, Australia and the Isle of Man were imported under licence for fish farming purposes subject to the usual health controls.

Licences were issued for the importation of 381,760 goldfish for the pet trade and samples of these fish were screened for disease.

EXPORTS OF FRESHWATER FISH

Salmon

The total quantity of salmon exported in fresh, chilled, frozen, salted and preserved forms was 828 tonnes compared with 1168 tonnes in 1983. The total value of these exports dropped from IR£5.3m in 1983 to IR£4.8m in 1984. Details for the two years are as follows:—

	1983		1984	
	Tonnes	IR£'000	Tonnes	IR£'000
Fresh, Chilled Frozen, Salmon	1,026	3,835	669	2,934
Smoked Salmon	134	1,383	157	1,861
Prepared/Preserved Salmon	8	31	2	5

Of the total quantity of fresh, chilled and frozen salmon exported in 1984, 247 tonnes went to France, 204 tonnes to Great Britain, 165 tonnes to Northern Ireland and 29 tonnes to the Netherlands.

The smoked salmon was exported mainly to Germany (48 tonnes), U.S.A. (35 tonnes), France (26 tonnes) and Belgium/Luxembourg (17 tonnes).

The average export price for fresh, chilled or frozen salmon was IR£4,386 per tonne as compared with IR£3,739 per tonne in 1983.

Rainbow Trout

Exports of rainbow trout in 1984 amounted to 109 tonnes valued at IR£161,000 as compared with 205 tonnes valued at IR£208,500 in 1983.

Eels

Exports of eels in 1984 amounted to 193 tonnes valued at IR£481,000 as compared with 168 tonnes valued at IR£451,300 in 1983.

ARTIFICIAL PROPAGATION

The production and distribution of salmon, sea trout and brown trout ova, fry, fingerlings and smolts produced at the various hatcheries are given in Appendix No. 22.

The total output of ova in the 1983/84 spawning season was as follows:—

Salmon	5,069,000
Brown Trout	2,061,000
Sea Trout	6,000

WATER POLLUTION CONTROL

The Department continued to exercise an advisory role in regard to the issue by local authorities of licences under the Local Government (Water Pollution) Act, 1977. During the year, 190 applications for licences were processed by the Department's licence vetting committee.

The Department consulted with the Department of the Environment, the Department of Agriculture, and the Central and Regional Fisheries Boards about the fisheries interest as regards water pollution matters. The Department is represented on the Water Pollution Advisory Council.

Water Quality Management Plan

The Department continued to collaborate with An Foras Forbartha in the preparation of draft water quality management plans.

Lough Sheelin

Progress continued in the rehabilitation of Lough Sheelin as a major trout fishery. The Slurry Transport Subsidy Scheme, operated since late 1980 by the Lough Sheelin Management Committee, had, by the end of 1984 succeeded in restoring the lake to an acceptable condition.

During the year approximately 10.5 million gallons of surplus slurry were removed under subsidy from the Sheelin catchment bringing the total number of gallons removed since inception of the scheme to approximately 52 million gallons.

By the end of the year arrangements had reached an advanced stage for the establishment of a restructured Management Committee for the preservation and protection of the Lough Sheelin catchment. This Committee will be representative of both agricultural and environmental interests and will be chaired by an officer of Cavan County Council. It will continue with the work of removing slurry from the Sheelin catchment.

EEL FISHING DEVELOPMENT

As indicated in the paragraphs dealing with scientific investigations and engineering research, work continued during the year on the investigation of eel stocks and eel fishing techniques. Advice and information on eel fishing was given to interested persons. Forty-two eel fishery authorisations were issued during the year bringing the numbr of fishing engines under such authorisations to sixty nine.

MANAGEMENT OF STATE FISHERIES

In 1984, 133 State-run fisheries — for the most part vested in the Land Commission — were managed by Fisheries Division. Rents received during the year amounted to IR£11,131 compared with IR£9,270 in 1983. Thirty four fisheries which fell due for re-letting were advertised during the year.

RESEARCH AND DEVELOPMENT

Salmon Stocks

The total reported salmon catch amounted to 839 tonnes, which represented a drop of 45% when compared to 1983 and was below the five year average (1979-83) and the 10 year average (1974-1983). The reduced catch was attributed to poor survival in the sea and this is borne out by the returns of tagged smolts which were in some cases about 25% of the returns obtained in 1983.

The 1 + sea winter fish were the dominant age group, representing 84.4% of the catch. There were no details available of fish drop-outs from fishing nets nor of illegal catches. The total catch, details of which are given earlier in the Report, could therefore be regarded as understated.

The average weight of salmon was reported to be less than in 1983 and this is evident from the statistical tables received from the Regional Fisheries Boards from which an average weight of 3.01 kg per salmon was calculated compared to 3.09 in 1983. A surprising feature of the rod catch was also the low average weight. This was evident also from the rod catch of the Burrishoole system, where a record is kept of all rod caught fish. There is evidence that the drift nets are selective of the larger components of the catch.

Fish arrived at the coast somewhat earlier than in 1983 and had petered out by the middle of July. The drift nets in the Northern region accounted for 36% of the total number of fish taken by all methods nationally. The next highest drift net catch was attributed to the South-Western and Southern regions where 14% of the total number of fish caught by all methods nationally was taken by this method in each region. The North-Western and Northern regions gave the highest yield to the rods accounting for almost 50% of the total national rod catch, 27% being taken in the North Western region and 22% in the Northern. The Eastern region gave the next highest yield to rods but here the commercial catch was only 4% of the total national catch. Indications are, from tagging experiments and from studies on migrations, that salmon homing to the east coast are being exploited right around the coast.

The data available from the salmon catch statistics is not suitable for calculating catch per unit effort (CPUE), which is an accepted

method of estimating stock abundance. For the commercial salmon fishery a catch per licence issued is used in the table underneath as it gives an indication from year to year of abundance. The table gives the 5 year average from 1974 to 1979 and from 1979-83 and the present year.

Year	Salmon catch per licence (No. of Fish)			
	Drift Nets	Draft Nets	Fixed Engines	Snap Nets
1974–79	349	150	333	77
1979–83	286	75	265	26
1984	243	80	236	42

The stock of salmon in a river is based on catch and escapement. In view of the fact that the majority of the salmon were taken at sea in the drift net fishery it is not possible to estimate stock abundance based on a river by river basis. We have therefore to rely on electronic and other fish counter data from rivers where the total escapement of salmon on their inward migration is recorded. In the river Shannon two counts are provided, Ardnacrusha covering one channel and Parteen the other with the exclusion of the Mulcaire river. The five year average together with the count for 1984 is given hereunder from the fish counters operated by the ESB and the Salmon Research Trust.

	Ardnacrusha	Parteen	Burrishoole	Erne	Clady
1979-83	1,880	1,390	628	553	222
1984	1,443	854	281	601	395

From the data presented it can be seen that the escapement in 1984 was below the five year average except alone in the case of the Clady and the Erne. In the Burrishoole system the count was the lowest recorded since records began in 1970. In the case of the Burrishoole there was evidence of poor survival to the smolt stage (3.1%) and the number of Burrishoole fish taken in coastal drift nets was also low. The Burrishoole is the only Irish river where data on smolt migration and returning adults is available over a long period (1970–1984).

Salmon Migrations

The coded wire tagging programme, which has been in progress for 5 years, was intensified in 1984. In all 10,374 pre smolts and a further 210,126 smolts were tagged, covering in all seven rearing stations. Three of these are operated by the E.S.B. on the Shannon, the River Erne and the River Lee, two by Regional Fisheries Boards and one by the Salmon Research Trust. One is in private hands. There was also a release of 47,611 coded wire tagged smolts which were distributed equally between the rivers Liffey, Slaney, Moy, Lennon and various

rivers in the Ballinakill area. The bulk of the smolts tagged should return as 1 + sea winter fish in 1985 and a small proportion as 2 year fish in 1986. The monitoring programme carried out on the returning adults indicated that the marine survival of smolts tagged in 1983 was the lowest recorded to date.

The return of tagged wild smolts in the Corrib was only 50% of that recorded in 1983 and the survival of the hatchery reared smolts released under the most favourable conditions was less than 30% of that obtained in 1983. The return rates for hatchery reared smolts varied from 1.25% for smolts reared at Cong to 0.01% for a batch of smolts reared at Virginia Hatchery on the Boyne and released in the Mattock river. A group of smolts reared at Cong and stocked into two rivers in the Ballinakill fishery district gave a return rate of 1.14%. The adult fish were recaptured as far apart as Dingle and Tory Island and only one fish was taken in the vicinity of Killary Harbour into which the smolts would have entered after release.

Adult salmon were monitored in the major landing ports around the country for the presence of fin clips and coded wire tags. The adipose fin was removed from the majority of the reared fish, its absence indicated it as a hatchery reared fish. The table under gives an indication of the contribution of reared fish to the catch in the various areas where fish were sampled. The majority of reared fish were found in the Galway/Limerick area followed by the Kerry coast and North Mayo. The percentage of reared fish in the catch was somewhat higher than in 1983 despite the poor survival of reared smolts in the sea.

Areas	No. examined	No. with fin clips	% with fin clips
Donegal	50,583	609	1.20
Mayo	8,906	291	3.27
Galway/Limerick	5,226	445	8.52
Kerry	8,482	338	3.98

As well as the recapture of coded wire tagged fish in home waters there were a further twelve fish tagged in Ireland taken off the Faroe Islands up to the end of 1984. All of these fish with the exception of one were under 60cm. in length and weighed less than 1kg. The exception was 61cm in length and 1.7kg in weight. It was from a batch of smolts released in 1982. All the other recaptures were from smolts released in 1983. One tagged smolt released in 1983 from Parteen was taken 10 miles up river from the mouth of the Tay in Scotland.

There were only 5 foreign external tagged fish taken in Irish waters. Four of these were located in the Donegal drift net area. Two of these fish were from the river North Esk in Scotland, one from Norway and one from Sweden. A further Norwegian tagged fish was taken in the estuary of the River Moy.

CORRIB RESEARCH PROGRAMME

The wild smolt run was monitored and estimated at 74,439 fish. The run began on April 16th and ended on May 16th. The age composition of the migrating smolts were 1 + 34.5%; 2 + 58.7%; 3 + 6.8%.

The juvenile salmon population in the Corrib catchment showed a dramatic decrease in the numbers of 0+ salmon present indicating a particularly poor spawning year in 1983 despite a good fishing year. The highest density of 0 + salmon was in the Cornamona river which was 3.2 per m^2, but this is less than half that recorded in 1983. The water levels were very low in all rivers in the Corrib system, which may have resulted in the low salmon densities because only the stronger fish survived competition for space. It was also noted while electrofishing that juvenile salmon were found in pool areas while normally they would only be found in riffle areas.

As a follow up to the annual electrofishing all the tributaries were surveyed from source to their confluence with Lough Corrib to assess the area of suitable salmon nursery in each tributary. This allows an estimation of the smolt production for each tributary. The total nursery area to the west of Lough Corrib is 253,434m^2 and 138,543m^2 to the east. These figures may be regarded as a minimum since there are a number of other reaches suitable for salmon nurseries which were not colonised by salmon in 1984.

DISEASES

Ulcerative Dermal Necrosis

There was very little evidence of U.D.N. in the Eastern, Southern, Shannon and Western regions. During the months January – May the disease was prevalent in the Cork area. It was also observed in the Killarney and Waterville districts. Widespread outbreaks were reported in the Ballina District in January. In the Northern region large numbers of salmon were observed with U.D.N. following spawning.

Parasitic diseases

Protozoan parasites such as *Costia* and *Trichodina* caused some losses in young fish. Serious losses due to these parasites in salmon smolts in the sea were largely averted due to strategic treatment with formalin. Sea lice, however, did result in some losses of farmed salmon. Proliferative kidney disease (PKD) caused losses and retarded growth rates in rainbow trout at one farm in Wicklow.

Viral disease

Two outbreaks of Infectious Pancreatic Necrosis (IPN) occurred during 1984 but the virus was isolated from fish on most of the trout farms in the country.

Bacterial diseases

A number of cases of furunculosis occurred in salmon smolts shortly after transfer from freshwater to cages in the sea. However, because of rapid diagnosis and use of a relatively new antibiotic, particularly effective against this disease, losses were not severe. All the affected fish originated from the same freshwater hatchery and methods to prevent this disease, including vaccination, are being researched.

A major outbreak of vibriosis in wild eels occurred again in Wexford Harbour during the Summer months. The disease was even more severe than occurred in the previous year. The severity of the outbreak was associated with high water temperatures and salinities due to the exceptional weather of 1984.

Non infectious diseases

Sunburn is believed to be the cause of major losses of cage reared salmon in the West of Ireland during the Summer months. Fish developed severe skin ulceration on the backs and pectoral fins. Exhaustive tests yielded no infectious organisms which could account for these losses and numerous treatments were unsuccessful in relieving the problem. Because of the exceptional Summer the possibility of sunburn was considered and a detailed histological study of skin from affected fish was carried out in collaboration with scientists at the Scottish Marine Biological Association laboratory at Oban who have for many years been studying the effects of ultra-violet radiation on fish. This work confirmed the presence of changes characteristic of UV damage in the skin of affected fish. The break in the good weather which occurred about the time of this breakthrough led to a speedy resolution of the problem lending further weight to the argument that excessive ultra violet light is the cause of the problem.

SEA TROUT

The task of monitoring sea trout catches and stocks continued in 1984. Landings were evaluated from data provided by the staff of the Regional Fisheries Boards. Licence returns from rod and line and commercial engines were interpreted. Biological and environmental indicators of the stocks and of conditions thought to influence trout production were examined. More detailed investigations of sea trout were concentrated on the Waterville Fishery (Lough Currane) in Co. Kerry. A census of the anglers' catch in the months of July and August was undertaken. The long summer drought of 1984 did not favour angling and therefore the sample was small. The several indicators monitored showed a further reduction in sea trout recruitment and catches in 1984. The information collected in the annual review of sea trout stocks and catches is being used to further elucidate the relationship between trout production and climate.

Inter species comparisons are an essential method of ascertaining the influence of particular factors in the natural habitat. One hundred years catch data from the Killorglin salmon fishery was analysed and

published as a basis for comparison with the smaller species. Tentative conclusions suggest that the nature of the sea trout run is decided largely by conditions prevailing in freshwater.

The Salmon Research Trust installations on the Burrishoole provide the only data on sea trout smolt migration and returning adults. A total of 1,325 sea trout were counted through the traps in 1984. This showed an apparent improvement on the count in 1983 (977) but special precautions were taken to prevent finnock escaping the count. The proportion of them in the stock remained slightly less than 30% as in previous years. The sea trout smolt total (2,383) was the smallest since 1980 and was well below the average for the ten year period 1970–79.

The Specimen Fish Committee recorded a total of 7 sea trout in excess of 6lbs. (2.72kg). Four of these were taken in the Comeragh system, one in Kilkeel, Northern Ireland and one in the Colligan, Dungarvan. The largest specimen (10½lb.) was taken in the River Boyne. All of the specimen sea trout were found to be multiple spawners.

A limited investigation of nets used (intentionally or otherwise) for the capture of salmonids in Connemara and Ballinakill was undertaken in July 1984. The evidence collected indicates a greater emphasis on the capture of salmon than sea trout.

EEL RESEARCH AND DEVELOPMENT

This year was the second in succession in which unusually low catches of silver eels and of immigrating elvers were made. In the absence of any major changes in the rate of exploitation of yellow eels, the indications are that the poor silver eel catch was associated with weather conditions. As in 1983, rainfall in the autumn was low and high floods in the river were few. Conditions, therefore, throughout most of the autumn were unsuitable for large scale migrations of the eels and catches accordingly were poor.

The scarcity of elvers was apparent throughout Europe. Similar reductions in the numbers of elvers reaching European waters have been observed in the past and it is expected that a recovery will take place before long. Continued failure of the natural elver run would naturally have an adverse effect on the eel stocks but there are several possible remedial steps which could be taken. No such need is apparent at present but the matter will be kept under constant review.

Exploratory fishing was confined to the River Nore where good stocks of yellow eels were found in the lower reaches. One particularly interesting observation was that the catch at Bennettsbridge in 1984 was very much smaller than that made in a comparable survey in

1982. There was no evidence that this resulted from fishing activities in the intervening seasons. One explanation would be that eels move up or down rivers to a greater extent than has been appreciated. A behaviour pattern such as this would be a major influence in the success of the commercial fisheries and the survey on the Nore will be continued for some years with a view to assessing its effect.

ENVIRONMENTAL STUDIES

Biological investigations continued in 1984 into the effects of arterial drainage works on fish stocks and the food of fish on the River Bonet, Co. Letirim, particularly in the middle reaches of the river where direct primary impact was evident in 1984. Tree stripping and devegetation through drainage activities upstream of Dromahaire eliminated the overhanging banks and edge vegetation, also shelter, cover and fish lies. The removal of boulders, stones and gravel from the river has created bed uniformity.

Dredging has resulted in large quantities of suspended solids and turbidity which was monitored since the commencement of dredging in 1982. In February 1984 suspended solids varied from 72 to 151 (ppm) and secchi disk reading of 20 to 10cm. Smothering of the river bed through sedimentation was heavy, calculated in February 1984 at 0.24 to 0.3kg of silt dry weight per m^2 per 24 hours of dredging operations. Food supply, eggs and larvae of game fish were adversely affected by the blanket of silt.

Juvenile salmon surveys were continued with high densities recorded upstream of the dredged area. The high numbers can be regarded as indicative of a good salmon stock in the catchment. Densities of more than $1m^2$ were recorded at all sites.

A biological survey of a number of sites on the Enfield Blackwater, a tributary of the River Boyne, was carried out in September 1984 to assess the impact of arterial drainage works on fish stocks in the river. Densities of juvenile salmon ranged from 0.2 to 0.23 per m^2 and small coarse fish species, stoneloach, minnow and gudgeon from 0.5 per m^2 to 0.85 per m^2. Very few trout were captured during the survey. Bed uniformity was evident at all sites surveyed with little or no upstream cover for trout angling. There was a good recovery of the invertebrate fauna at the sites. The organisms occurring in most samples were *Asellus aquaticus, Gammarus duebeni,* nymphs of the mayflies *Baetis rhodani, B.pumulis* and the caddis larvae *Hydropsyche* sp. The Freshwater crayfish *Austropotamobius palipes* absent in other areas of the post drained Boyne was plentiful. Molluscs were also present especially *Lymnaeia peregra* and *Potamopyrgus jenkinsi.*

A preliminary baseline survey of fish stocks in the tributaries of the Dunkellin catchment upstream of Rahasane Turlough was undertaken

in October. The channel characteristics of this river indicated that it has been subjected to a number of drainage schemes some dating back to the last century which had considerably altered the channel form. Seven sites were electrofished, fish species encountered were stoneloach, brown trout, minnow, stickleback and eels. Overall fish densities were low and ranged from 0.1 per m^2. Stoneloach were the dominant species and no juvenile salmon were recorded from the sites.

Phase 1 of the North Eastern gas pipe laying programme was carried out by An Bórd Gais. The effects of siltation arising from excavations of the river bed on fish and their food were monitored. The gas pipeline crossed under the bed of the Rivers Camac, Liffey and Tolka. A report on the findings was submitted to An Bórd Gais.

In anticipation of the lowering of the Leixlip reservoir on the river Liffey for inspection of Leixlip dam the coarse fish populations were sampled. Roach had been introduced to Leixlip in 1978 and they have since inter-bred there with rudd and bream which were already resident. More than 50% of the Leixlip cyprinids were hybrids and roach have, in the short period since 1978, apparently achieved dominance in the cyprinid populations.

RAINBOW TROUT AND SALMONID CULTURE

Because of escalating costs of commercially manufactured trout diets, interest in using minced waste fish offal for commercial trout productions was revived. From 27 July to 30 September a trial, comparing feed conversion efficiencies, growth rates and environmental conditons, was carried out at a farm in Co. Wicklow using an imported pellet, dry diet and waste white fish combined with vitamin additives and binders i.e. wet diet. Feeding rates were respectively 1.5% and 5% of body weight for dry and wet diets. Two lots of test fish 1,000 per lot (average weight 3.6oz) were fed for nine weeks. At the end of that period the fish had reached marketable size. Temperatures were in the range 9° to 17° with the maximum number of days (37) at 13–15°C. Food conversions on the dry diet were 1.13 to 1 and on the wet diet 9.4 to 1. Comparative costs per tonne of fish produced were IR£565 and IR£300 respectively. However, growth rates of fish on dry diet were faster, taking 42 days to reach 8oz. size, whereas 30% of the fish fed on wet diet took 62 days to reach 8oz. size. Oxygen content was 1mg/l lower at effluent end of pond fed on the diet.

Overall it was concluded that wet diets could be used effectively during periods when good quality waste fish was available, but sufficient quantities at low cost would be a limiting factor in extending the use of wet diet.

The work on the prediction of marine algal bloom initiated in 1983 was continued. The purpose of this monitoring is to warn fish farmers

of impending danger to their stock due to algal bloom. Flagellate X was identified from three of the sites sampled but there was only minimum mortality caused by the blooms.

GRANT AIDED RESEARCH PROJECTS

Studentships

There were six post-graduate studies being carried out under the Department's studentship scheme namely:

1. A study of the biology of amphipods in Lough Hyne (UCC).
2. Invertebrate predator prey interactions in the lower basin of Lough Corrib (UCG).
3. Effects of organic waste disposal at sea on selected benthic organisms (UCG).
4. The ecology of marine shore crytofauna (UCC).
5. The ecology and activity pattern of roach (rutilus rutilus) in the Corrib catchment (UCG).
6. The use of mitochondrial DNA as a marker for fish species (UCD).

Three further projects were awarded in 1984 as follows:

1. Studies of the roach population of Lough Neagh (NUU).
2. Predation and invertebrate community structure in running waters (UCC).
3. A study of the chemistry of sediments and associated biota in selected areas of inshore coastal waters (TCD).

Bursaries

Twelve undergraduate students were employed on freshwater projects for a period of 8 weeks during the summer vacation to assist the Department's staff on the collection and processing of material. The students were recruited by interview from 3rd level colleges.

The projects undertaken by these students were as follows:

1. Eel research
2. Assessment of impact of fin fish cage culture operations on an adjacent environment.
3. Sampling of adult salmon.
4. Juvenile salmon in the Corrib.
5. Connemara parr survey.
6. Sea trout census and related investigations in the Currane fishery, Waterville, Co. Kerry.

ENGINEERING

Arterial Drainage

Arterial drainage works which are currently in progress are already listed in the Report at page 24.

In the case of the cross-border drainage scheme for the Monaghan Blackwater, a scheme for minimising the impact on fisheries was drawn up by the Department based on a pre-drainage survey of fishery amenities carried out by the Central Fisheries Board. The measures recommended by the Department will be incorporated in that part of the scheme to be executed by the Office of Public Works.

Investigation of Inland Fish Movements

Smolt trapping and counting operations at Galway sluice barrage on the River Corrib started on the 15th of April and continued until the 16th June. A total of 20,354 salmon smolts were trapped and released. The greatest number for any one day was 4,600 on the 9th of May. In the same period 1 sea trout, 3 brown trout, 40 eels and 41 roach were trapped and released. The efficiency of the trapping unit was improved by renewing the smolt deflector screen.

Electronic Fish Counters

Policy in regard to the maintenance of electronic salmon counters was reviewed. It was recognised that effective maintenance of the 10 installations around the coast was not practicable from a Dublin base and accordingly it was decided in principle that responsibility for each site should devolve on the appropriate Regional Board. However, it may be some time before this decision can be implemented because most of the installations need refurbishing or improvement prior to hand over.

The following table sets out the limited information yielded by those installations which are fully or partially operational.

River	Location	Total Count	Maximum Count and Date	
			Count	Date
Blackwater*	Clondulane	1,262	239	18.4.84
Boyne**	Navan	220	25	3.10.84
Corrib***	Galway	296	103	11.6.84
Liffey	Islandbridge	3,541	124	21.7.84
Maigue	Adare	326	66	1.12.84

*Tunnel out of order from 6.6.84.
**Trapping from 3.10.84.
***Undercounting due to hydraulic problems during floods.

Water Abstraction

Various water abstraction schemes, mainly for public water supply purposes, were the subject of detailed study by the Department's technical staff during the year. A list of schemes on which the Department was consulted in 1984 is given at page 25 of the Report.

Local authorities and their consulting engineers are becoming more aware of the possible damage that may be caused to the fishery interest

by such schemes and are consulting the Department at the early stages of design to discuss measures to minimise damage.

Fish Passes

Fish passes designed by the Department were built by various private and public concerns at the following locations:— Clohamon weir on the River Slaney; Tinahely Water Supply Intake Weir on the River Derry (tributary of the River Slaney); Midleton weir on the Owenacurra River; Sneem Falls Upper on the River Sneem; and on the impounding dams on Lakes Carromore in Co. Sligo and Doolough in Co. Clare.

Fish Culture Installations

The Department continued to advise the Salmon Research Trust of Ireland Inc. on fisheries engineering matters. Advisory services were also provided to the Central and Regional Fishery Boards in respect of the various hatcheries and rearing stations under their care and in respect of proposed river improvement schemes. Officers of the Department supervised maintenance and improvement works as required.

Rainbow Trout Farming

Proposed fish farm sites were investigated and assessed. Suggested lay-outs were provided and, in some cases, detailed engineering designs were prepared and provided.

Small Hydro-Electric Schemes

There was a further increase in 1984 in the number of small hydro-electric schemes being developed by private interests at old mill sites. All those that came to the Department's notice were investigated and advice was given on measures needed to comply with the requirements of the Fisheries Acts in regard to safety and migration of fish. Many problems arose because of failure on the part of the developer to consult at the early stages of design, often resulting in unnecessary delays and expense.

Electric Fish Barriers

An electric fish barrier designed by the Department and its electronics consultant was erected on the Corrib-Mask canal at the Cong Salmon Hatchery to prevent the migration of roach from Lough Corrib to Lough Mask.

Eel Fishery Development

The usual technical advisory services were provided by the Department to those already engaged in commercial fishing for silver eels and new applications for authorisation were inspected and assessed. Elver traps were installed at the sluice barrage on the River Corrib at Galway to capture elvers for release in productive areas of the Corrib system.

FOYLE FISHERIES COMMISSION

The Commission is a statutory North/South body established to conserve, protect and improve the fisheries of the Foyle Area. It consists of a senior and junior member appointed by the Minister for Fisheries and Forestry and a senior and junior member appointed by the Department of Agriculture for Northern Ireland. The post of Chairman rotates each year between the senior members of the Commission and during the year under review was held by the Dublin senior member.

Detailed information on the Commission's activities in the year 1984 are given in the Commission's own Annual Report.

The spawning count of 2,677 redds in 1984 was 476 less than the previous year's figure of 3,153. The catch of salmon and grilse by commercial engines amounted to 29,532 fish (84,731 kg) compared with 83,252 fish (284,311 kg) in 1983. The rod catch of salmon and grilse was 379 fish as against 831 for 1983 while the rod catch of sea trout was 3,588 fish compared with 6,757 for the previous year.

The operation of the Commission's commercial fishery in the year ended 30 September, 1984, resulted in a deficit of £9,918 sterling compared with a deficit of £4,054 in 1983. This deficit is due largely to the small catch which resulted from the poor fishing season. Each year the profit/deficit realised on the operation of the commercial fishery is credited/debited to the Commission's Accumulated Revenue Account.

During the year under review the Department of Fisheries and Forestry and the Department of Agriculture for Northern Ireland (Fisheries Division) paid subventions to the Commission to enable it to meet its overall deficit of £207,963 sterling at 30 December, 1984. This is an increase of £26,797 sterling over the 1982/83 deficit and is due to the increase in the commercial fishery deficit, a low demand for angling licences because of poor angling conditions and higher costs.

The Commission's accounts for the year ended 30 September, 1984, are included as an Appendix to its 1984 Annual Report. Particulars of Regulations made by the Commission in 1984 are included in Appendix No. 20 of this Report.

THE SALMON RESEARCH TRUST OF IRELAND INCORPORATED

The Annual Report of the Trust for 1984 gives a detailed account of its work during the year. The Trust was funded jointly by the Department and Arthur Guinness & Sons plc. The grant-in-aid paid to the Trust by the Department in 1984 amounted to IR£56,600.

The Trust continued to make a valuable contribution to our knowledge of salmon and sea trout and factors bearing on their future survival.

A complete census of upstream and downstream migrants is available from the installations on the Burrishoole System since 1970. The total count of upstream migrants in 1984 was only 281, this included eleven two-sea winter salmon. There was poor survival in the sea from the smolt stage (3.1% to fresh water) and the number of Burrishoole fish caught by coastal nets was also poor. A further feature of the run was the early appearance of the grilse with almost all the fish arriving in June/July. This could also account for the low average weight 4.4 lbs. compared with 5.5 lbs. in 1983.

The smolt run was very close to the predicted number — 7,270 — and this was derived from a small broodstock.

The recapture of 1 + sea winter fish from reared smolts was the worst experienced for almost twenty years, when only 0.53% returned from a release of 15,000 smolts in 1983. This is in accordance with results obtained in other rivers and given elsewhere in this report.

The experiments on line breeding from 2 sea winter and 1 + sea winter fish were continued. The only adults which returned as spring fish were derived from grilse parentage smolts, line bred for six generations. Two year old spring fish parentage smolts released in 1983 gave a significant return as grilse. There is no evidence from the results obtained that "like" breeds "like".

The census work on wild sea trout indicates the run in 1984 was somewhat higher than in 1983 but the sea trout smolt total (2,382) was the lowest since 1970. The autumn migrant trout were also monitored to assess their contribution to the sea trout stock. The total count was 1,384. A proportion of these (1+ and 2+ fish) will contribute to the 1985 sea trout recruitment. Wild sea trout smolts tagged in 1983 gave a final recapture rate of 5.4% and only 0.3% of the autumn migrating trout returned as sea trout.

Examination of scales of recaptures from reared sea trout (2+ smolts) released in 1982 revealed that only 33.7% had been to sea. Only three finnock returned in 1983 from 1,301 yearling smolts released in 1983 but a further two fish were recaptured in 1984. The total return as sea trout from this group of 1+ smolts was 0.4%.

Interesting results were obtained from two groups of 2+ smolts released in 1984. One group of 1,570 fish were released in freshwater and only 48% migrated downstream as smolts. Of these, 18 (2.4%) recaptures were identified (by scale reading) as exhibiting sea growth whilst the remaining 37 recaptures showed no sign of sea growth. From 1,191 similar smolts released from a cage moored in the brackish

water of Lough Furnace in 1984, 29 returned as finnock in 1984 and a further 42 (3.5%) showed no signs of sea growth. These experiments give indications of the value of rearing sea trout eggs to the smolt stage for release. In summary, from releases of 2+ smolts in 1982 and 1984 there were similar recapture rates (2.1%, 2.4%, 2.4%) as finnock and similar overall recapture rates (6.1%, 7.3%, 5.9%). Survival from the eyed egg stage up to the end of the year was 70%. Differences were observed in the three strains of salmon reared in 1984.

INTERNATIONAL AND OTHER CONFERENCES

During the year, the Department was represented at the following conferences, committees and working groups etc.:—

Abroad

International Council for the Exploration of the Sea (ICES) — Copenhagen, Denmark.

ICES Working Group on Atlantic Salmon, Copenhagen, Denmark.

EIFAC Symposium on Habitat Modification and Freshwater Fisheries, Aarhus, Denmark.

North Atlantic Salmon Conservation Organisation (NASCO), Edinburgh, Scotland.

Working Group on Analytical Method for Fishery Products, Ostend, Belgium.

Institute of Fisheries Management Conference, Derry.

Home

Foyle Fisheries Commission

Meeting of Freshwater Research Workers, Galway.

River Erne Joint Protection Committee

Steering Committee on EEC sponsored Environmental Impact Assessment of Arterial Drainage.

Lough Sheelin Slurry Transport Management Committee.

Pollution Control Committee, Donegal County Council.

N.B.S.T. Salmonid Advisory Committee.

Interdepartmental Environment Committee.

Water Pollution Advisory Council.

Working Party on Manual on Farm Development and its Environmental Impact.

Water Resources Advisory Committee of An Foras Forbartha.

Joint Working Group an Applied Agricultural Meteorology.

Workshop on Environmental Impact Studies — Methodology.

EEC Symposium on Environmental Impacts of Chemicals in Agriculture.

Irish Specimen Fish Committee.

LEGISLATION

Particulars of Statutory Instruments relating to inland fisheries made during the year are included in Appendix No. 20.

APPENDIX No. 1.

Quantitity and Value of Sea Fish (excluding Salmon) returned as landed by Irish registered vessels in Irish Ports during 1983 and 1984.

Species	Quantity (tonnes)		Value (IR£'000)	
	1984	1983	1984	1983
DEMERSAL				
Flat Fish				
Brill	110	91	196	151
Dabs	442	426	101	94
Lemon Sole	335	271	219	167
Megrims	1,310	1,596	647	623
Plaice	2,420	2,223	1,756	1,644
Sole	313	411	1,035	1,204
Turbot	208	216	608	571
Other Flat Fish	106	53	50	19
Round Fish				
Cod	5,464	6,781	3,585	3,922
Haddock	3,766	3,838	1,806	1,471
Hake	1,066	986	1,010	922
Ling	468	524	187	192
Saithe	2,351	2,500	1,004	868
Whiting	8,813	8,313	2,503	2,087
Other Demersal				
Dogfish	6,235	4,233	1,297	842
Monkfish	1,854	1,516	1,741	1,254
Ray/Skate	2,112	1,852	1,033	933
Other Demersal	223	181	206	105
TOTAL DEMERSAL	37,596	36,011	18,984	17,069
PELAGIC				
Herring	31,622	32,025	4,498	5,229
Horse Mackerel	13,920	15,086	1,377	1,874
Mackerel	53,211	65,537	6,139	8,542
Sprat	4,655	5,511	437	489
TOTAL PELAGIC	103,408	118,159	12,451	16,134
TOTAL WETFISH	141,004	154,170	31,435	33,203
CRUSTACEANS				
Crabs	3,014	1,686	1,145	569
Crawfish	85	111	743	877
Dublin Bay Prawns	3,987	5,545	4,353	5,496
Lobsters	398	400	3,025	2,532
Palaemonid Shrimps	75	69	265	241
TOTAL CRUSTACEANS	7,559	7,811	9,531	9,715
MOLLUSCS				
Escallops	321	418	446	448
Queen Escallops	27	7	15	4
Mussels	12,640	5,739	1,351	659
Oysters	371	316	732	579
Periwinkles	1,902	1,512	716	526
Pakourdes	7	2	22	5
Squid	263	192	437	201
Other Molluscs	17	18	21	42
TOTAL MOLLUSCS	15,548	8,204	3,740	2,464
Sea Urchins	113	48	136	50
TOTAL ALL FISH	164,224	170,233	44,842	45,432

In addition to the above landings into the Republic, 37,906 tonnes of fish and 66 tonnes of shellfish valued at IR£8,167,647 and IR£116,179 respectively were landed directly into foreign ports or transhipped at sea for export by Irish registered vessels during 1984.

APPENDIX No. 2

Comparison of the Average Price per tonne of various kinds of Sea Fish, 1976-1984

SPECIES	1976	1977	1978	1979	1980	1981	1982	1983	1984
	£	£	IR£	IR£	IR£	IR£	IR£	IR£	IR£
Sole	1,485	1,732	2,093	2,184	2,192	2,565	2,759	2,932	3,304
Brill	515	680	740	826	866	1,145	1,423	1,661	1,790
Turbot	799	1,145	1,231	1,444	1,389	1,781	2,314	2,643	2,929
Plaice	364	457	519	557	514	575	690	740	726
Dabs	143	176	195	215	193	166	173	221	230
Megrims	149	230	206	260	229	322	269	390	494
Ray/Skate	228	262	306	375	372	428	466	504	489
Cod	242	375	406	448	375	411	482	578	656
Haddock	188	327	365	373	291	258	296	383	480
Hake	288	456	428	571	499	674	764	936	947
Whiting	109	205	217	228	167	177	182	251	284
Saithe	142	255	301	312	297	293	335	347	427
Herring	142	261	295	287	255	170	176	163	142
Mackerel	61	77	63	74	83	105	113	130	115
Sprats	25	33	38	67	75	63	74	89	94

N.B.—"Average price" as shown in this table represents total value divided by total weight for each kind of fish, year by year. It does not purport to take direct cognizance of any abnormal rise or fall in price attributable to a seasonal glut or shortage of a particular kind of fish.

APPENDIX No. 3

Value and Quantity of Landings of Sea Fish (excluding Salmon) at ports at which the value of such Landings exceeded IR£200,000 in 1984.

	Port	Total		DEMERSAL		PELAGIC		SHELLFISH	
		IR£'000	Tonnes	IR£'000	Tonnes	IR£'000	Tonnes	IR£'000	Tonnes
1.	Killybegs	10,792	76,732	2,442	5,176	8,301	71,522	49	34
2.	Castletownbere	3,294	9,534	2,220	3,186	744	6,064	330	284
3.	Greencastle	2,980	6,349	2,898	6,276	1	6	81	67
4.	Howth	2,843	5,378	1,977	4,234	70	558	796	586
5.	Dunmore East	2,518	6,143	1,472	2,708	430	2,945	616	490
6.	Clogherhead	1,980	2,522	483	1,077	6	47	1,491	1,398
7.	Rossaveel	1,583	6,225	621	1,645	643	4,303	319	277
8.	Burtonport	1,525	5,607	947	2,336	408	3,064	170	207
9.	Valentia	1,291	1,772	891	1,337	35	235	365	200
10.	Kilmore Quay	1,212	1,564	817	1,279	5	24	390	261
11.	Skerries	970	1,353	250	611	3	22	717	720
12.	Dingle	929	2,172	611	1,251	96	777	222	144
13.	Cobh	821	6,205	97	150	710	6,048	14	7
14.	Cromane	690	8,290	3	4	—	—	687	8,286
15.	Achill	574	1,449	253	685	84	608	237	156
16.	Helvick	559	880	366	646	15	101	178	133
17.	Bantry	378	737	1	5	*	1	377	731
18.	Balbriggan	367	561	98	198	1	3	268	360
19.	Rathmullan	342	2,733	—	—	333	2,721	9	12
20.	Fenit	339	198	20	34	4	40	315	124
21.	Killala/Kilcummin	307	639	274	608	*	3	33	28
22.	Arklow	305	478	247	399	7	51	51	28
23.	Union Hall	304	751	126	223	55	428	123	100
24.	Belmullet/Blacksod	304	165	3	7	—	—	301	158
25.	Malin Head	285	660	—	—	—	—	285	660
26.	Rosslare	276	511	226	451	4	34	46	26
27.	Clifden/Cleggan	275	254	112	209	*	1	163	44
28.	Castlegregory	261	111	7	8	*	1	254	102
29.	Carna/ Cill Chiarain	250	376	61	216	—	—	189	160
30.	Wexford	230	3,006	5	6	—	—	225	3,000
31.	Baltimore	219	1,012	75	121	110	869	34	22
32.	Urris	214	326	—	—	—	—	214	326
33.	Kinsale	209	617	116	231	42	337	51	49

*Indicates a value of less than IR£500.

APPENDIX No. 4

Imports and Exports of Fish and Fishery Products in 1984

(as compared with 1983)

	Quantity		Value	
	1984	1983	1984	1983
	Tonnes	Tonnes	IR£'000	IR£'000
I.—IMPORTS:				
Fish: Fresh, chilled	15,324	19,553	3,802	3,911
Fish: Frozen	1,824	3,270	3,114	2,994
Fish: Salted, Dried or Smoked	1,230	1,143	1,906	1,847
Shellfish: Fresh, Salted or Dried	664	466	2,323	1,880
Prepared or preserved fish	7,234	6,786	17,393	16,042
Prepared or preserved shellfish	200	139	547	451
Fishmeal and fish oils	6,720	6,875	3,083	2,682
TOTALS	33,196	38,232	32,168	29,807
II.—EXPORTS:				
Fish: Fresh, chilled	27,199	43,068	16,438	18,542
Fish: Frozen	76,500	81,412	30,734	32,096
Fish: Salted, Dried or Smoked	12,551	12,839	9,101	9,184
Shellfish: Fresh, Salted or Dried	16,230	8,963	19,626	15,227
Prepared or preserved fish	1,479	974	1,966	1,286
Prepared or preserved shellfish	749	720	1,240	1,108
Fishmeal and fish oils	3,260	3,381	1,055	922
Landed directly by Irish registered vessels into foreign ports				
Fish	15,468	28,187	5,699	6,429
Shellfish	66	127	116	95
TOTALS	153,502	179,671	85,975	84,889

APPENDIX No. 5

Herring Fishing 1984

Ports at which more than 1,000 tonnes were landed	Total Quantity Tonnes	Total Value IR£'000
1. Killybegs	12,218	1,784
2. Rossaveel	3,952	609
3. Cobh	3,395	455
4. Dunmore East	2,840	412
5. Burtonport	2,304	320
6. Castletownbere	1,209	177

APPENDIX No. 6

Mackerel Fishing 1984

Ports at which more than 1,000 tonnes were landed	Total Quantity Tonnes	Total Value IR£'000
1. Killybegs	45,376	5,141
2. Castletownbere	3,175	411
3. Rathmullan	2,721	333

APPENDIX No. 7

Regional Distribution and Classification of Fishing Craft and of Personnel Engaged in Fishing in 1984

ICES Statistical Areas	How Engaged	Men	Total Vessels	Motor Vessels							Boats propelled by outboard engines, sails, oars etc.	
				Gross Tons								
				Over 100	75—99	51—74	26—50	16—25	11—15	10 and under	18' Keel and upwards	18' Keel and under
AREA VIIA (Omeath to Helvick)	Solely	938	343	20	15	43	73	13	8	116	55	—
	Partially	518	189	—	—	1	1	—	—	53	94	40
	Laid-up	—	17	2	—	6	4	3	—	2	—	—
	Totals	1,456	549	22	15	50	78	16	8	171	149	40
AREA VIIGH (Ardmore to Clonakilty)	Solely	237	100	—	1	1	5	5	5	29	47	7
	Partially	148	77	—	—	—	—	—	—	5	57	15
	Laid-up	—	2	—	—	—	—	2	—	—	—	—
	Totals	385	179	—	1	1	5	7	5	34	104	22
AREA VIIJK (Union Hall to Ballyduff)	Solely	984	426	18	8	18	19	6	28	224	103	2
	Partially	697	196	—	—	—	1	—	—	34	131	30
	Laid-up	—	14	2	—	2	5	1	1	3	—	—
	Totals	1,681	636	20	8	20	25	7	29	261	234	32
AREA VIIBC (Kilrush to Mullaghmore)	Solely	364	102	8	5	8	16	7	7	39	8	4
	Partially	1,832	864	—	1	1	5	4	12	292	453	96
	Laid-up	—	42	2	—	2	3	2	2	31	—	—
	Totals	2,196	1,008	10	6	11	24	13	21	362	461	100
AREA VIA (Bundoran to Moville)	Solely	709	145	31	5	26	45	13	4	2	19	—
	Partially	1,379	607	—	—	—	3	2	2	237	345	18
	Laid-up	—	11	2	—	1	2	—	—	6	—	—
	Totals	2,088	763	33	5	27	50	15	6	245	364	18
TOTALS (All Areas)	Solely	3,232	1,116	77	34	96	158	44	52	410	232	13
	Partially	4,574	1,933	—	1	2	10	6	14	621	1,080	199
	Laid-up	—	86	8	—	11	14	8	3	42	—	—
	Totals	7,806	3,135	85	35	109	182	58	69	1,073	1,312	212

For comparison purposes with previous years the I.C.E.S. Areas VIIGH and VIIJK togcther would equate with the former ICES Area VIIGK.

APPENDIX No. 8

Expenditure on Fisheries for the years ended 31 December 1983 and 31 December 1984

	1 Jan.—31 Dec. 1984	1 Jan.—31 Dec. 1983
	(IR£)	(IR£)
1. SEA FISHERIES		
A. By Department of Fisheries and Forestry (Fisheries Division):		
(i) Development	296,000	281,000
(ii) Fishery Harbours and other marine works	1,080,000	2,384,000
B. By An Bord Iascaigh Mhara		
(i) Administration and Current Development (grant-in-aid)	5,371,000	4,745,000
(ii) Capital Developments (grant-in-aid)	2,174,000	2,279,000
(iii) Repayable Advances	2,792,000	3,000,000
(iv) Repayment of Advances written off	680,000	500,000
C. Roinn na Gaeltachta Grants for Marine Works	318,000	217,000
2. INLAND FISHERIES		
A. By Department of Fisheries and Forestry (Fisheries Division) (grant-in-aid)	4,772,000	5,101,000
B. By the Salmon Research Trust of Ireland Incorporated (grant-in-aid)	57,000	60,000
3. DEPARTMENT OF FISHERIES AND FORESTRY		
General administrative expenses for Fisheries Division	2,459,000	1,745,000
TOTALS	19,999,000	20,312,000

APPENDIX No. 9

Coastal Extent of Fisheries Regions and Names of the Principal Rivers in each Region

Fisheries Region	Coastal Extent of Region	Principal Rivers
Eastern	Carlingford Lough, Co. Louth to Kiln Bay, Co. Wexford and seawards to a line twelve miles from baselines.	Fane, Dee, Clyde, Boyne Blackwater, Deel, Liffey, Vartry, Slaney, Avoca.
Southern	Kiln Bay, Co. Wexford to Ballycotton Pier, Co. Cork and seawards to a line twelve miles from baselines.	Suir, Barrow, Nore, Blackwater Funcheon, Bride, Awbeg.
South Western	Ballycotton Pier, Co. Cork, to Kerry Head, Co. Kerry and seawards to a line twelve miles from baselines.	Lee, Owenboy, Bandon, Argideen, Ilen, Mealagh, Owvane, Coomhola, Glengarriff, Adrigole, Roughty, Sheen, Finnihy, Blackwater, Sneem, Laune, Flesk, Maine, Caragh, Currane, Cummeragh, Inny.
Shannon	Kerry Head, Co. Kerry to Hag's Head, Co. Clare and seawards to a line twelve miles from baselines.	Shannon, Deel, Fergus, Mulcaire, Little and Upper Brosna, Inny, Maigue, Feale.
Western	Hag's Head, Co. Clare to Pigeon Point, Co. Mayo and seawards to a line twelve miles from baselines.	Corrib, Claregalway, Ballinahinch, Recess, Cashla, Owengowla, Invermore, Inverbeg, Screebe, Furnace, Culfin, Errif, Bundorragh, Dawross, Carrowniskey, Bunowen, (Louisburgh).
North Western	Pigeon Point, Co. Mayo to Mullaghmore Head, Co. Sligo and seawards to a line twelve miles from baselines.	Newport, Burrishoole, Owenduff, Owengarve, Owenmore, Glenamoy, Moy, Cloonaghmore, (Palmerstown), Easkey, Ballisodare, Garavogue (Sligo), Bonet, Drumcliff.
Northern	Mullaghmore Head, Co. Sligo to Rossan Point, Co. Donegal and seawards to a line twelve miles from baselines.	Erne, Bundrowes, Bunduff, Eske, Eaney, Water, Oily Glen, Owenea, Gweebarra, Gweedore, (Crolly), Clody, Lackagh, Lennon, Crana.

APPENDIX No. 10

Quantity and Value of Salmon and Sea Trout taken in 1982, 1983 and 1984 by Instruments of Capture

SALMON

Instruments	Quantity (kg)			Value (IR£)		
	1984	1983	1982	1984	1983	1982
Total for rod and line	36,248	49,555	40,439	199,366	218,488	177,932
Total for drift nets	624,947	1,254,219	689,966	3,437,211	5,529,852	3,035,850
Total for draft nets	130,025	172,099	139,892	715,140	758,784	615,525
Total for stake nets, weirs etc.	47,563	38,671	37,508	261,599	170,500	165,035
Total for all engines	838,783	1,514,544	907,805	4,613,316	6,677,624	3,994,342

SEA TROUT

Instruments	Quantity (kg)			Value (IR£)		
	1984	1983	1982	1984	1983	1982
Total for rod and line	8,844	10,877	9,341	35,113	35,958	31,853
Total for drift nets	5,873	4,317	1,974	23,316	14,272	6,731
Total for draft nets	9,474	6,430	5,822	37,611	21,257	19,853
Total for stake nets, weirs etc.	328	415	69	1,302	1,371	235
Total for all engines	24,519	22,039	17,206	97,342	72,858	58,672

APPENDIX No. 11

Quantity and Value of Salmon taken in 1982, 1983 and 1984 by Fisheries Region

REGION	*	Quantity (kg)			Value (IR£)		
		1984	1983	1982	1984	1983	1982
Eastern							
Dundalk	R	802	462	477	4,411	2,037	2,099
District	N	8,278	2,589	4,564	45,529	11,415	20,082
Drogheda	R	897	1,392	1,182	4,934	6,137	5,201
District	N	15,641	16,087	10,498	86,026	70,928	46,191
Dublin	R	694	455	215	3,817	2,006	946
District	N	231	10	31	1,271	44	136
Wexford	R	4,834	3,084	405	26,587	13,597	1,782
District	N	17,601	4,178	5,439	96,806	18,421	23,932
	R	7,227	5,393	2,279	39,749	23,777	10,028
Total	N	41,751	22,864	20,532	229,632	100,808	90,341
Southern							
Waterford	R	1,521	3,641	1,443	8,366	16,053	6,349
District	N	97,990	86,779	45,588	538,945	382,609	200,587
Lismore	R	1,467	1,648	1,992	8,069	7,266	8,765
District	N	43,402	61,504	23,880	238,711	271,171	105,072
	R	2,988	5,289	3,435	16,435	23,319	15,114
Total	N	141,392	148,283	69,468	777,656	653,780	305,659
South Western							
Cork	R	319	1,651	709	1,755	7,279	3,119
District	N	43,579	101,286	30,837	239,685	446,570	135,683
Kerry	R	4,254	6,576	4,252	23,397	28,994	18,709
District	N	91,569	176,330	126,391	503,630	777,439	556,120
	R	4,573	8,227	4,961	25,152	36,273	21,828
Total	N	135,148	277,616	157,228	743,315	1,224,009	691,803
Shannon							
Limerick	R	1,030	4,658	3,006	5,665	20,537	13,226
District	N	17,182	42,518	23,125	94,501	187,462	101,794
	R	1,030	4,658	3,006	5,665	20,537	13,226
Total	N	17,182	42,518	23,135	94,501	187,462	101,794
Western							
Galway	R	2,373	1,939	1,564	13,052	8,549	6,881
District	N	30,199	71,608	20,189	166,095	315,720	88,832
Connemara	R	1,306	1,635	1,532	7,183	7,209	6,741
District	N	26,972	18,075	8,847	148,346	79,692	38,927
Ballinakill	R	2,112	1,832	1,970	11,616	8,077	8,668
District	N	4,281	9,176	7,205	23,546	40,457	31,702
	R	5,791	5,406	5,066	31,851	23,835	22,290
Total	N	61,452	98,859	36,241	337,987	435,869	159,461
North-Western							
Bangor	R	1,747	3,080	2,544	9,609	13,580	11,194
District	N	13,641	102,461	45,968	75,026	451,751	202,259
Ballina	R	4,189	4,939	6,244	23,040	21,776	27,474
District	N	58,173	106,384	87,054	319,952	469,047	383,038
Sligo	R	2,384	5,309	3,971	13,112	23,407	17,472
District	N	11,309	18,403	8,507	62,200	81,139	37,431
	R	8,320	13,328	12,759	45,761	58,763	56,140
Total	N	83,123	227,248	141,529	457,178	1,001,937	622,728
Northern							
Ballyshannon	R	2,098	2,604	3,903	11,539	11,481	17,173
District	N	22,779	36,857	41,693	125,285	162,502	183,449
Letterkenny	R	4,221	4,650	5,029	23,216	20,502	22,128
District	N	299,708	610,744	377,541	1,648,394	2,692,770	1,661,180
	R	6,319	7,254	8,932	34,755	31,983	39,301
Total	N	322,487	647,601	419,234	1,773,679	2,855,272	1,844,629
GRAND TOTAL		838,783	1,514,544	907,805	4,613,316	6,677,624	3,994,342

*R indicates capture by means of single rod and line.
N by means of nets, weirs, etc.

APPENDIX No. 12

Quantity and Value of Sea Trout taken in 1982, 1983 and 1984 by Fisheries Regions

REGION	*	Quantity (kg)			Value (IR£)		
		1984	1983	1982	1984	1983	1982
Eastern							
Dundalk	R	1,079	1,056	770	4,284	3,491	2,625
District	N	689	559	245	2,735	1,848	836
Drogheda	R	476	798	314	1,890	2,638	1,070
District	N	764	1,480	200	3,033	4,892	682
Dublin	R	47	52	119	187	172	406
District	N	6,289	3,040	1,315	24,967	10,050	4,481
Wexford	R	511	427	322	2,029	1,411	1,098
District	N	920	849	369	3,652	2,807	1,258
	R	2,113	2,333	1,525	8,390	7,712	5,199
Total	N	8,662	5,928	2,129	34,387	19,597	7,257
Southern							
Waterford	R	46	–	–	183	–	–
District	N	279	1,040	144	1,108	3,438	491
Lismore	R	–	–	–	–	–	–
District	N	347	704	182	1,378	2,327	621
	R	46	–	–	183	–	–
Total	N	626	1,744	326	2,486	5,765	1,112
South Western							
Cork	R	–	81	2,994	–	268	10,209
District	N	615	203	772	2,442	671	2,633
Kerry	R	248	1,926	302	985	6,367	1,030
District	N	1,834	1,259	455	7,281	4,162	1,552
	R	248	2,007	3,296	985	6,635	11,239
Total	N	2,449	1,462	1,227	9,723	4,833	4,185
Shannon							
Limerick	R	–	156	1	–	516	3
District	N	544	49	336	2,160	162	1,146
	R	–	156	1	–	516	3
Total	N	544	49	336	2,160	162	1,146
Western							
Galway	R	–	23	36	–	76	123
District	N	–	–	168	–	—	573
Connemara	R	3,569	3,838	2,466	14,169	12,688	8,409
District	N	18	105	–	71	347	–
Ballinakill	R	1,225	1,082	1,007	4,863	3,577	3,434
District	N	499	–	647	1,981	–	2,206
	R	4,794	4,943	3,509	19,032	16,341	11,966
Total	N	517	105	815	2,052	347	2,779
North Western							
Bangor	R	705	541	431	2,799	1,789	1,469
District	N	–	–	407	–	–	1,388
Ballina	R	181	96	48	719	317	163
District	N	17	–	4	67	–	14
Sligo	R	74	51	14	294	169	48
District	N	60	37	80	238	122	273
	R	960	688	493	3,812	2,275	1,680
Total	N	77	37	491	305	122	1,675
Northern							
Ballyshannon	R	17	105	101	67	347	348
District	N	2,031	1,590	2,249	8,063	5,257	7,669
Letterkenny	R	666	645	416	2,644	2,132	1,418
District	N	769	247	292	3,053	817	996
	R	683	750	517	2,711	2,479	1,766
Total	N	2,800	1,837	2,541	11,116	6,074	8,665
GRAND TOTAL		24,519	22,039	17,206	97,342	72,858	58,672

* R indicates capture by means of single rod and line.
N by means of nets, weirs etc.

APPENDIX No. 13

Quantity and value of Eels taken in 1982, 1983 and 1984 by Fisheries Regions

REGION	Quantity (kg)			Value (IR£)		
	1984	1983	1982	1984	1983	1982
Eastern						
Dundalk District	946	908	908	2,517	1,198	1,998
Drogheda District	304	762	762	473	1,094	1,094
Dublin District	1,360	453	—	2,000	651	—
Wexford District	2,814	15,000	393	7,274	15,000	690
Total	5,424	17,123	2,063	12,264	17,943	3,782
Southern						
Waterford District	2,120	4,839	4,839	6,011	9,491	9,491
Lismore District	–	694	769	–	694	846
Total	2,120	5,533	5,608	6,011	10,185	10,337
South Western						
Kerry District	1	–	5	3	–	5
Cork District	–	–	136	–	–	100
Total	1	–	141	3	–	105
Shannon						
Limerick District	41,546	61,570	79,625	159,706	194,438	173,958
Total	41,546	61,570	79,625	159,706	194,438	173,958
Western						
Galway District	23,664	23,905	46,238	61,659	49,177	96,500
Total	23,664	23,905	46,238	61,659	49,177	96,500
North Western						
Bangor District	–	308	586	–	600	1,289
Ballina District	3,069	5,391	5,799	4,676	8,640	12,757
Sligo District	771	540	–	1,500	1,200	–
Total	3,840	6,239	6,385	6,176	10,440	14,046
Northern						
Ballyshannon District	11,985	2,476	5,280	10,305	3,460	5,029
Letterkenny District	127	–	–	192	–	–
Total	12,112	2,476	5,280	10,497	3,460	5,029
GRAND TOTAL	88,707	116,846	145,340	256,316	285,643	303,757

The catch figures set out above are based on returns which are not completed. This explains any apparent inconsistency between the figures and the official export figures in any particular year.

APPENDIX No. 14

Total Quantity and Value of Salmon, Sea Trout and Eels taken by all Engines in 1982, 1983 and 1984 by Fisheries Regions

REGION	Total Quantity per Region (kg)			Total Value per Region (IR£)		
	1984	1983	1982	1984	1983	1982
Eastern						
Dundalk District	11,794	5,574	6,965	59,476	19,989	28,154
Drogheda District	18,082	20,519	12,957	96,356	85,689	73,929
Dublin District	8,621	4,010	1,679	32,242	12,923	15,421
Wexford District	26,680	23,538	6,929	136,348	51,236	33,302
Total	65,177	53,641	28,530	324,422	169,837	150,806
Southern						
Waterford District	101,956	96,299	52,013	554,613	411,591	218,723
Lismore District	45,216	64,550	26,823	248,158	281,458	117,585
Total	147,172	160,849	78,836	802,771	693,049	336,308
South-Western						
Cork District	44,513	103,221	35,447	243,882	454,788	146,237
Kerry District	97,906	186,091	131,404	535,296	816,962	579,139
Total	142,419	289,312	166,851	779,178	1,271,750	725,376
Shannon						
Limerick District	60,302	108,951	106,103	262,032	403,115	294,430
Total	60,302	108,951	106,103	262,032	403,115	294,430
Western						
Galway District	56,236	97,475	68,195	240,806	373,522	194,119
Connemara District	31,865	23,653	12,845	169,769	99,936	58,173
Ballinakill District	8,117	12,090	10,828	42,006	52,111	48,311
Total	96,218	133,218	91,868	452,581	525,569	300,603
North-Western						
Bangor District	16,093	106,390	49,936	87,434	467,720	223,372
Ballina District	65,629	116,810	99,148	348,454	499,780	431,268
Sligo District	14,598	24,340	12,572	77,344	106,037	56,118
Total	96,320	247,540	161,656	513,232	1,073,537	710,758
Northern						
Ballyshannon District	38,910	43,632	53,226	155,259	183,047	218,026
Letterkenny District	305,491	616,286	383,279	1,677,499	2,716,221	1,692,496
Total	344,401	659,918	436,505	1,832,758	2,899,268	1,910,522
GRAND TOTAL	952,009	1,653,429	1,070,349	4,966,974	7,036,125	4,428,803

APPENDIX No. 15

Number, Quantity and Value of Salmon taken by Single Rod and Line in 1982, 1983, and 1984 by Fisheries Regions

REGION	No. of Fish			Quantity (kg)			Value (IR£)		
	1984	1983	1982	1984	1983	1982	1984	1983	1982
Eastern									
Dundalk District	199	95	146	802	462	477	4,411	2,037	2,099
Drogheda District	182	284	362	897	1,392	1,182	4,934	6,137	5,201
Dublin District	153	103	66	694	455	216	3,817	2,006	950
Wexford District	1,122	680	124	4,834	3,084	405	26,587	13,597	1,782
Total	1,656	1,162	698	7,227	5,393	2,280	39,749	23,777	10,032
Southern									
Waterford District	377	939	442	1,521	3,641	1,443	8,366	16,053	6,349
Lismore District	427	541	610	1,467	1,648	1,992	8,069	7,266	8,765
Total	804	1,480	1,052	2,988	5,289	3,435	16,435	23,319	15,114
South Western									
Cork District	82	531	217	319	1,651	709	1,755	7,279	3,120
Kerry District	1,086	2,038	1,302	4,254	6,576	4,252	23,397	28,994	18,708
Total	1,168	2,569	1,519	4,573	8,227	4,961	25,152	36,273	21,828
Shannon									
Limerick District	239	1,343	908	1,030	4,658	3,006	5,665	20,537	13,226
Total	239	1,343	908	1,030	4,658	3,006	5,665	20,537	13,226
Western									
Galway District	465	482	479	2,373	1,939	1,564	13,051	8,549	6,881
Connemara District	320	424	469	1,306	1,635	1,532	7,183	7,209	6,741
Ballinakill District	414	490	603	2,112	1,832	1,970	11,616	8,077	8,668
Total	1,199	1,396	1,551	5,791	5,406	5,066	31,850	23,835	22,290
North Western									
Bangor District	562	958	779	1,747	3,080	2,544	9,608	13,580	11,194
Ballina District	1,285	1,489	1,912	4,189	4,939	6,244	23,040	21,776	27,474
Sligo District	783	1,715	1,216	2,384	5,309	3,971	13,112	23,407	17,472
Total	2,630	4,162	3,907	8,320	13,328	12,759	45,760	58,763	56,140
Northern									
Ballyshannon District	581	661	1,195	2,098	2,604	3,903	11,539	11,481	17,173
Letterkenny District	1,536	1,459	1,540	4,221	4,650	5,029	23,216	20,502	22,128
Total	2,117	2,120	2,735	6,319	7,254	8,932	34,755	31,983	39,301
GRAND TOTAL	9,813	14,232	12,370	36,248	49,555	40,439	199,366	218,487	177,931

APPENDIX No. 16

Number, Quantity and Value of Sea Trout taken by Single Rod and Line in 1982, 1983 and 1984 by Fisheries Regions

REGION	No. of Fish			Quantity (kg)			Value (IR£)		
	1984	1983	1982	1984	1983	1982	1984	1983	1982
Eastern									
Dundalk District	1,830	2,060	1,424	1,079	1,056	770	4,284	3,491	2,625
Drogheda District	1,117	2,119	1,018	476	798	314	1,890	2,638	1,070
Dublin District	85	80	348	47	52	119	187	172	406
Wexford District	1,656	1,326	949	511	427	322	2,029	1,412	1,098
Total	4,688	5,585	3,739	2,113	2,333	1,525	8,390	7,713	5,199
Southern									
Waterford District	102	—	—	46	—	—	183	—	—
Lismore District	—	—	—	—	—	—	—	—	—
Total	102	—	—	46	—	—	183	—	—
South-Western									
Cork District	—	237	4,400	—	81	2,994	—	268	10,209
Kerry District	399	2,849	459	248	1,926	302	985	6,367	1,030
Total	399	3,086	4,859	248	2,007	3,296	985	6,635	11,239
Shannon									
Limerick District	—	529	2	—	156	1	—	516	3
Total	—	529	2	—	156	1	—	516	3
Western									
Galway District	—	57	99	—	23	36	—	76	123
Connemara District	6,963	9,196	7,249	3,569	3,838	2,466	14,169	12,688	8,409
Ballinakill District	2,935	2,946	2,019	1,225	1,082	1,007	4,863	3,577	3,434
Total	9,898	12,199	9,367	4,794	4,943	3,509	19,032	16,341	11,966
North-Western									
Bangor District	1,554	1,095	1,080	705	541	431	2,799	1,789	1,469
Ballina District	381	250	137	181	96	48	719	317	163
Sligo District	130	138	39	74	51	14	294	169	48
Total	2,065	1,483	1,256	960	688	493	3,812	2,275	1,680
Northern									
Ballyshannon District	38	243	249	17	105	101	67	347	348
Letterkenny District	1,688	2,032	1,019	666	645	416	2,644	2,132	1,418
Total	1,726	2,275	1,268	683	750	517	2,711	2,479	1,766
GRAND TOTAL	18,878	25,157	20,491	8,844	10,877	9,341	35,113	35,959	31,853

APPENDIX No. 17

Particulars of Receipts and Expenditure by the Central and Regional Fisheries Boards for year ended 31 December 1984

Fisheries Board	Opening Balance	RECEIPTS						EXPENDITURE					Closing Balance
		Licence Duty	Fishery Rates	Sale of Fish	Ex-chequer Grant	Misc. Receipts	Total Receipts	Salaries/ Wages	Travelling and Subsistence	Purchase of Vehicles Boats and Equipment	Misc. Expenditure	Total Expenditure	
	IR£	IR£	IR£	IR£	IR£	IR£	IR£	IR£	IR£	IR£	IR£	IR£	IR£
Central	−1,689	—	—	159,300	1,787,000	125,942	2,072,242	1,650,684	66,068	13,644	368,655	2,099,051	−28,498
Eastern	−10,000	56,237	9,267	85	338,000	17,406	420,995	189,908	41,765	—	196,335	428,008	−17,013
Southern	+55,885	46,819	16,330	16,170	338,000	28,790	446,109	280,685	33,020	7,860	127,503	449,068	+52,926
South-Western	+18,681	50,130	18,381	1,367	410,000	19,778	499,656	355,903	32,601	68,232	82,949	539,685	−21,348
Shannon	+57,334	30,416	11,917	321	185,000	20,542	248,196	175,339	14,598	—	77,904	267,841	+37,689
Western	−43,544	30,241	24,647	1,126	336,000	29,053	421,067	239,222	39,040	10,507	108,161	396,930	−19,407
North-Western	+4,120	42,778	25,602	1,468	299,000	33,666	402,514	265,121	18,438	17,782	111,418	412,759	−6,125
Northern	+2,134	54,804	15,515	4,628	334,000	31,592	440,539	307,921	27,336	8,596	96,538	440,391	+2,282

APPENDIX No. 18

Particulars of Licences Issued by Regional Fisheries Boards for Year 1984

		A	O	R	B	P	S	T	Special Local Licences (Tidal Waters)		D	C	U	E	F	G	H	I	J	N	K	L	M	V	
		Annual Valid All Districts	Late Season Valid All Districts	Seven Day Valid All Districts	Annual District of Issue Only	Late Season District of Issue Only	Foyle Valid All Districts	Foyle District of Issue Only	Rod	Net	Drift Net	Draft Net	Pole Net	Bag Net	Stake Net	Head Weir	Box or Crib	Loop Net	Snap Net	Oyster Dredge	Gap Eye Basket or Coghill	Long Line For Eels	Eel Trap	Fyke Net	
		IR£ 15	IR£ 10	IR£ 5	IR£ 7	IR£ 5	IR£ 10	IR£ 4	—	—	IR£ 115	IR£ 65	IR£ 10	IR£ 65	IR£ 115	IR£ 22	IR£ 44	IR£ 4.50	IR£ 26.50	IR£ 30	IR£ 30	IR£ 30	IR£ 50	—	
Eastern		1,110	105	49	1,027	599	—	—	—	—	16	180	—	—	—	—	6	—	—	—	8	6	4	23	
Southern		337	4	277	1,703	62	—	—	—	—	203	12	—	0	4	1	2	—	134	—	12	0	1	11	
South-Western		417	47	225	1,107	221	—	—	—	—	125	88	—	0	—	—	1	—	—	69	—	—	—	2	
Shannon		237	24	11	1,188	54	—	—	—	—	81	83	—	—	—	—	—	—	—	—	97	4	—	3	
Western		177	100	327	251	381	—	0	—	—	89	17	—	—	—	—	5	—	—	108	32	2	2	7	
North-Western		284	53	307	1,230	457	0	0	0	25	120	16	—	1	—	—	7	—	—	228	27	6	2	—	
Northern		361	34	300	1,215	507	4	42	303	23	185	119	—	—	—	—	2	31	—	2	14	18	3	—	
TOTAL		2,923	367	1,586	7,721	2,281	4	42	303	48	819	515	—	1	4	1	23	31	134	407	190	36	12	46	

APPENDIX No. 19

Licence Duties Payable on Fishing Engines

		IR£
On each	Salmon Rod—Annual (valid all districts)	15.00
do.	Salmon Rod—Late Season (valid all districts)	10.00
do.	Salmon Rod—Seven day (valid all districts)	5.00
do.	Salmon Rod—Annual (valid district of issue only)	7.00
do.	Salmon Rod—Late Season (valid district of issue only)	5.00
do.	Salmon Rod—Foyle area extension (valid all districts)	10.00
do.	Salmon Rod—Foyle area extension (valid district of issue only)	4.00
On each	Drift Net	115.00
do.	Draft Net	65.00
do.	Snap Net	26.50
do.	Bag Net	65.00
do.	Stake Net	115.00
do.	Head Weir	22.00
do.	Box or Crib	44.00
do.	Pole Net	10.00
do.	Loop Net	4.50
do.	Gap, Eye, Basket or Coghill Net for Eels	30.00
do.	Longline for Eels	30.00
do.	Eel trap	50.00
do.	Oyster Dredge	30.00
do.	Fyke Net for train of 20 or less plus IR£1.50 for each net thereafter.	30.00

Special Local Licences

Rod	7.00
Draft Net	88.00

Special Local Rod Licences may be reduced by IR£5.50 for holders of annual (ordinary) or annual (district) licences.

APPENDIX No. 20

Abstract of Statutory Instruments made in 1984

Sea Fisheries:

1. Control of Fishing for Mackerel Order, 1984 (S.I. No. 52 of 1984) dated 29th February, 1984 extends the period of application of the Control of Fishing for Mackerel Order, 1983, which prohibits fishing for mackerel by vessels exceeding 55ft except under licence issued by the Minister for Fisheries and Forestry, up to and including 30th April, 1984. The Order also extends the validity of existing licences to that date.

2. Fishery limits (European Community) Regulations, 1984 (S.I. No. 74 of 1984) dated 16th March, 1984 implements the provisions of Article 6 of Council Regulation (EEC) No. 170/83 of 25th January, 1983, which allows the State to restrict fishing by other Member States in certain areas.

3. Sea Fisheries (Conservation and Rational Exploitation) Order, 1984 (S.I. No. 87 of 1984), dated 5th April, 1984 makes an infringement of Council Regulation (EEC) No. 171/83 of 25th January, 1983 (as amended by Council Regulation (EEC) No. 2931/83) which prescribes certain technical measures for the conservation of fishing resources, an offence so far as that regulation relates to the State.

4. Herring (Restriction of Fishing in the Celtic Sea) Order, 1984 (S.I. No. 167 of 1984) dated 4th July, 1984 lifts the ban on herring fishing in the Celtic Sea.

5. Celtic Sea Herring Fishing (Licencing) Order, 1984 (S.I. No. 240 of 1984) dated 20th September, 1984 prohibits herring fishing in the Celtic Sea from 25th September, 1984 to 31st March, 1985 except under licence issued by the Minister for Fisheries and Forestry.

6. Control of Fishing for mackerel (No. 2) Order, 1984 (S.I. No. 260 of 1984) dated 22nd October, 1984 prohibits fishing for mackerel within the exclusive limits of the State by Irish vessels over 55ft except under licence issued by the Minister for Fisheries and Forestry.

7. Sea Fishing (Enforcement of European Community Quotas) Order, 1984 (S.I. No. 281 of 1984) dated 7th October, 1984 makes an infringement of Council Regulation (EEC) No. 320/84 of 31st January, 1984, which fixes total allowable catches and quotas for certain species and specifies conditions under which these catches may be fished, an offence in so far as that regulation relates to the exclusive limits of the State.

8. Herring Prohibition on Fishing Order, 1984 (S.I. No. 336 of 1984) dated 13th December, 1984 prohibits fishing for herring by Irish vessels in the area north of the line of latitude 52°30' North until 31st December, 1984.

Inland Fisheries

1. Northern Fisheries Region (River Owenea) Bye-Law No. C.S. 126, 1984, dated 14th March, 1984, brings forward the closing date of the annual close season for angling for salmon and trout on the River Owenea from 31st March to 14th March.

2. Bohernabreena and Roundwood Reservoirs (Angling) Bye-Law, No. 635, 1984, dated 29 March, 1984, prohibits angling with rod and line with any lure other than artificial fly in the Bohernabreena Reservoir, Co. Dublin and the Roundwood Reservoir, Co. Wicklow.

3. Eastern Fisheries Region (River Slaney) Bye-Law No. 636, 1984, dated 29th March, 1984, permits the use of licensed fyke nets for the taking of eels in the River Slaney upstream and downstream of Wexford Bridge during the period from 1st April to 30th November in each year.

4. Salmon (Restriction of Fishing at Sea) Order, 1984, dated 5th June, 1984, prohibits fishing for salmon in that part of the exclusive fishery limits of the State that lies outside twelve nautical miles from the baselines, having regard to decision No. 82/886 EEC of the Council of the European Communities to approve the Convention for the conservation of Salmon in the North Atlantic ocean.

5. Northern Fisheries Region (River Erne) Bye-Law No. 638, 1984, dated 27th June, 1984, prohibits fishing for salmon and trout with any fishing engine other than rod and line in the tidal waters of the River Erne, or its tributary, the Abbey River during the period from 6 a.m. on 14th July, 1984 to 1st August, 1984.

6. Restriction on the Use or Possession of Monofilament or Multistrand Monofilament Nets Bye-Law No. 639, 1984, dated 29th June, 1984, prohibits the use of monofilament or multistrand monofilament nets in fishing for salmon or trout and the possession of such nets mounted or otherwise prepared for that purpose.

7. Salmon and Trout Conservation Bye-Law No. 640, 1984, dated 24th July, 1984, extends the commencement dates in 1984 of the annual close season:

   (a) for commercial fishing for salmon and trout to:—

      (i) 28th July in the Cork, Kerry, Limerick, Galway, Connemara, Ballinakill, Bangor, Ballina, Sligo, Ballyshannon and Letterkenny Fishery Districts except those areas where the annual close season commences on any date earlier than 24th July.

      (ii) 11th August in the Waterford and Lismore Fishery Districts and

      (iii) 18th August in the Dublin, Wexford, Drogheda and Dundalk Fishery Districts and

   (b) for angling for salmon and trout to 13th October in the River Fane in the Dundalk Fishery District.

8. Salmon, Eel and Oyster Fishing Licences (Alteration of Licence Duties) Order, 1984, dated 18th December, 1984, prescribes the rates of salmon, eel and oyster fishing licence duties payable from 1st January, 1985.

9. Agricultural and Fishery Products (Regulation of Export) Act, 1947 (Export of Salmon and Trout) (Amendment) Order, 1984, dated 21st

December, 1984, revises the list of exemptions from the export licensing requirements contained in the Agricultural and Fishery Products (Regulation of Export) Act, 1947 (Export of Salmon and Trout) Order, 1966. (S.I. No. 86 of 1966).

Foyle Area

1. Foyle Area (Licensing of Fishing Engines) (Amendment) Regulations, 1984, dated 24th January, 1984, increase the licence fees payable in 1984 in respect of each type of net used and game fishing licence issued in the Foyle area.

2. Foyle Area (Control of Netting) (Temporary Provisions) Regulations, 1984, dated 29th May, 1984, provide for a temporary amendment of the Foyle Area (Control of Netting) Regulations, 1981, which control and restrict both draft and drift netting for salmon in the Foyle Area. They prescribe that, for the duration of the 1984 drift net fishing season, fishing by drift net is prohibited during the period between 1700 hours (5 p.m.) on any day and 0700 hours (7 a.m.) on the next following day instead of during the period between 0500 hours (5 a.m.) and 1700 hours (5 p.m.) on any day.

3. Foyle Area (Close Season) (Amendment) Regulations, 1984, dated 29 May, 1984, amend the Foyle Area (Close Season) Regulations, 1981, by providing that in 1984 the annual close season in the Foyle Area during which the taking of salmon and trout, except with rod and line, is prohibited, shall end on 19th June, 1984, rather than on the Sunday immediately preceding the eighth Monday after 1st May (24th June 1984).

APPENDIX NO. 21

Particulars of Public Inquiries held during 1984.

Date of Inquiry	Where Held	Subject Matter	Decision on Report of Inquiry
1. 10th April, 1984	Bantry, Co. Cork	Proposed designation of Inner Bantry Bay, under section 54 of Fisheries Act, 1980.	Under consideration
2. 1st May, 1984	Achill Sound, Co. Mayo	Proposed designation of Achill Sound area, under section 54 of Fisheries Act, 1980.	Order made.
3. 2nd May, 1984	Belmullet, Co. Mayo	Proposed designation of Blacksod/Broadhaven Bays, under section 54 of Fisheries Act, 1980.	Order made.
4. 15th May, 1984	Midleton, Co. Cork	Proposed designation of an area at Cork Harbour, under section 54 of the Fisheries Act, 1980.	Under consideration
5. 22nd May, 1984	Skerries, Co. Dublin	Proposed designation of Rogerstown Estuary, under section 54 of the Fisheries Act, 1980.	Decision taken not to proceed with the making of the order.
6. 29th May, 1984	Kenmare, Co. Kerry	Proposed designation of Kenmare Bay, under section 54 of the Fisheries Act, 1980.	Under consideration
7. 12th June, 1984	Leenane, Co. Galway	Proposed designation of Killary Harbour, under section 54 of Fisheries Act, 1980.	Order made.
8. 26th June, 1984	Carlingford	Proposed designation of area at Carlingford Lough, under section 54 of Fisheries Act, 1980.	Under consideration
9. 10th July, 1984	Wexford Town	Proposed designation of Wexford Harbour, under section 54 of Fisheries Act, 1980.	Under consideration

Further information on designation and associated enquiries can be obtained from the Aquaculture Section of the Department.

APPENDIX No. 22

Output and Disposal of Fish Hatchery Produce 1983/84

Hatchery	Output of Ova			Disposal	River System Stocked
	Salmon (000's)	Sea Trout (000's)	Brown Trout (000's)	(000's)	
Glenties	183			183 Ova	Owenea
Inistioge	395			160 Fry 120 .. 25 ..	Barrow Nore Suir
Mallow	720			400 Ova	Blackwater
Salmon Research Trust	356	6		50 Ova 100 .. 100 .. 40 .. 10 .. 30 .. 20 .. 6 Sea Trout Ova	Retained Northern Regional Fisheries Board Southern Regional Fisheries Board North Western Regional Fisheries Board South Western Regional Fisheries Board Dublin District Anglers Galway Aqua Enterprises Retained
Virginia	360			40 Fingerlings 30 .. 65 .. 52 .. 20 .. 32 Smolts 10 Parr 5 Smolts 3 Parr	Stoneyford Trimblestown Boyne Kells Blackwater Murmod Boyne .. Fane ..
Carrowmore	84			19 Ova 6 .. 9 .. 1 .. 49 ..	Oweniney Glencullen Glenamoy Bellacorick Altnabrocky
Cong	474			329 Ova 120 .. 25 .. 80 Parr 12 .. 10 .. 11 .. 14 .. 10 .. 45 Smolts 20 .. 20 .. 50 Trout Smolts	Retained Clare River U.C.G. students for research Retained Gowla Fishery Delphi Fishery Kylemore Fishery Carrowniskey Owenwee Corrib system Connemara system Ballinakill system Corrib system
Fanure Fish Farm			710	408 Fry 61 Summerlings 21 Fingerlings 104 Spring yearlings 4 Autumn yearlings 54 Two year olds	Various Central Board waters in Cos. Cavan, Westmeath, Longford, Roscommon and Mayo and Angling Interests.

Hatchery	Output of Ova			Disposal	River System Stocked
	Salmon (000)	Sea Trout (000)	Brown Trout (000)	(000)	
Cullion (Mullingar)			1,233	723 Fry 70 Summerlings 55 Fingerlings 30 Spring yearlings 2 Autumn yearlings 62 Two year olds	Various Central Board waters in Cos. Cavan, Longford, Roscommon and Mayo and Angling Interests.
Parteen	1,399		118	4 Trout Ova 8 Trout Fingerlings 5 ,, 8 ,, 2 ,, 2 ,, 4 ,, 40 Trout Fry 44 ,, ,, 42 Fry 284 ,, 171 ,, 198 ,, 9 Fingerlings 24 ,, 25 ,, 23 ,, 23 ,, 23 ,, 22 ,, 22 ,, 7 Pre-smolts 5 ,, 4 ,, 10 ,, 3 ,, 3 ,, 6 ,, 10 Smolts 10 ,, 10 ,, 10 ,, 5 ,, 14 ,, 10 ,, 9 ,, 105 ,,	Retained Portumna Nenagh Scarriff/Mountshannon Garrykennedy Kilgarvan Retained in stock Scarriff/ Mountshannon Killaloe Kilmastulla Mulcair and tributaries Nenagh Scarriff Nenagh River L/Brosna Silver Suck Inny B/Brosna Kilcrow Clodiagh Kilcrow Nenagh Mulcair and tributaries Camcor Feale Maigue Shannon (near Parteen) Suck Inny L/Brosna B/Brosna Kilcrow Nenagh Silver Mulcair and tributaries Shannon (downstream of Parteen)
Erne	377			377 Ova 1 Parr 7 ,, 2 ,, 4 ,, 4 ,, 8 ,, 26 ,,	Retained in 1984 Termon Abbey Clody, Crolly River Swanlinbar Glenfarne Knappagh Annalee and tributaries

Hatchery	Output of Ova			Disposal	River System Stocked
	Salmon (000)	Sea Trout (000)	Brown Trout (000)	(000)	
				15 Smolts	Termon
				19 ,,	Erne tailrace
				3 ,,	Abbey
				18 ,,	Clody, Crolly River
				4 ,,	Swanlinbar
				2 ,,	Glenfarne
				3 ,,	Knappagh River
				13 ,,	Annalee and tributaries
Carrigadrohid	721			721 Ova 135 Smolts	Retained in 1984 Lee

APPENDIX No. 23

Scientific and Other Papers

DEPARTMENTAL

A. IRISH FISHERIES INVESTIGATIONS

Series A (Freshwater)

23. C. Moriarty	Advances in Fish Biology in Ireland (a report on the Seminar of the National Committee for Biology of the Royal Irish Academy held on 23rd and 24th April, 1981). The Report is edited by C. Moriarty and includes the following papers by staff of the Department of Tourism, Fisheries and Forestry:—
	J. Browne: Population estimates of Juvenile Salmonidae.
	J. Doyle: The development of Rainbow Trout farming in Ireland.
	D. T. McCarthy: The impact of arterial drainage on fish stocks on the Trimblestown River.
24. J. P. O'Connor and E. J. Wise	Observations on the Trichoptera of the Killarney Lakes, County Kerry, Ireland.

B. FISHERY LEAFLETS

123. E. Fahy	The Sea Trout Year 1983.
124. R. Grainger and E. McArdle	Surveys for herring larvae off the North West and West Coasts of Ireland in 1982/1983.
126. D. T. McCarthy	Interaction between Seals and Salmon Drift Net Fisheries in the West of Ireland.

C. FISHERIES BULLETIN

8. E. Fahy	Sea Trout and their Exploitation by Draft Net from the Feale and Munster Blackwater Rivers, Southern Ireland.

OTHER PUBLICATIONS

R. Grainger, E. Barnwall and A. Cullen

P. Hillis

P. Hillis

C. Moriarty

C. Moriarty

Herring larval surveys in the Celtic Sea and Division VIIJ in 1983/84. ICES CM 1984 H:29.

Further experiments with a double cod-end *Nephrops* trawl. ICES CM 1984 K:36.

Compositional changes in the *Nephrops* catch in the Western Irish Sea 1969-84 ICES CM 1984 K:37.

Stock enhancement in the Irish eel *Anquilla anquilla* fishery. EIFAC Technical Paper 42, Supplement 1, pp. 50-58.

Behaviour and exposure to bird predation of elvers *Anquilla anquilla* following mass release. Irish Naturalists' Journal 21, pp. 220-221.

Wt. 153010. 700. 7/86. Cahill. (573). Spl.